SONY

3-755-146-21(1)

Chapter 1
Introduction

Chapter 2
Hookups and Getting Started

Chapter 3
Preparation

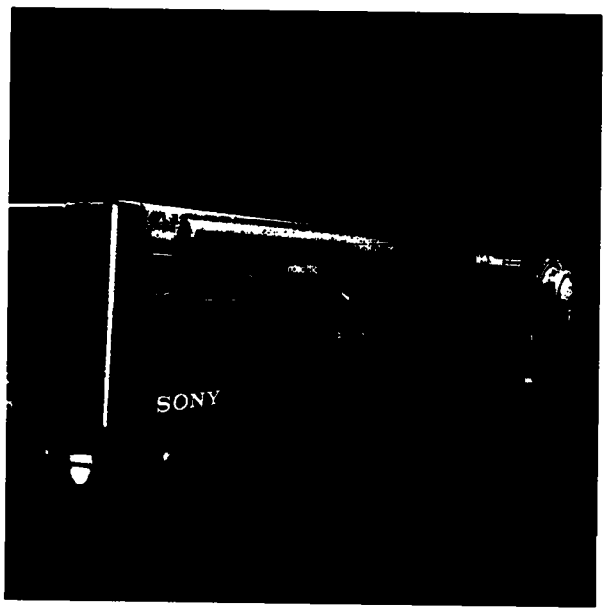
Chapter 4
Basic Operations

Chapter 5
Advanced Operations

Chapter 6
Editing

Chapter 7
Additional Information

EV-S2000



Video Cassette Recorder Hi8

Operating Instructions

Before operating the unit, please read this manual thoroughly and retain it for future reference.

video Hi8

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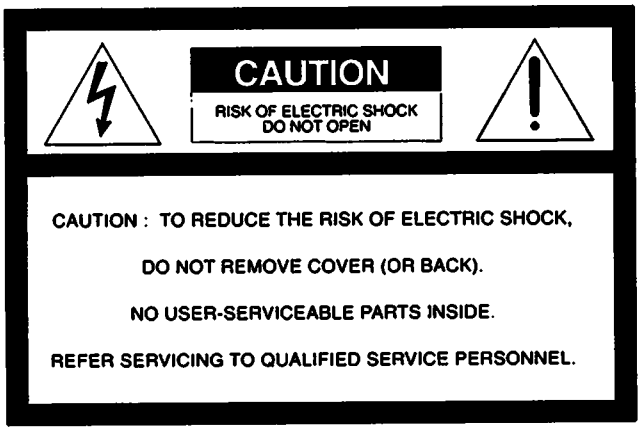
WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION : TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

CAUTION:
TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED AC PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

Warning
"You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment."

Note:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution
Television programs, films, video tapes and other materials may be copyrighted.
Unauthorized recording of such material may be contrary to the provisions of copyright laws.
Also, use of this recorder with cable television transmission may require authorization from the cable television transmitter and/or program owner.

Owner's Record

The model number is located at the front and rear panel, and serial number is located on the top. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. EV-S2000

Serial No. _____

Welcome !

Congratulations on your purchase of the Sony EV-S2000 Video Cassette Recorder.
This video cassette recorder is the result our commitment to bring Sony customers high quality, state-of-the-art technology.
Thank you for choosing Sony.

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Precautions

Safety

- Operate the unit only on 120 V AC, 60 Hz.
- If anything falls into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- One blade of the plug is wider than the other for the purposes of safety and will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, contact your dealer.
- Unplug the unit from the wall outlet if you do not intend to use it for an extended period of time. To disconnect the cord, pull it out by the plug itself, never by the cord.

Installation

- Allow adequate air circulation to prevent internal heat build-up.
- Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation holes.
- Do not install the unit near heat sources such as radiators or air ducts, or in a place subject to direct sunlight , excessive dust, mechanical vibration or shock.
- Do not install the unit in an inclined position. It is designed to be operated in a horizontal position only.
- Keep the unit and cassettes away from equipment with strong magnets, such as microwave ovens or large loudspeakers.
- Keep the unit away from a TV. Otherwise, the playback picture may become distorted.
- Do not place heavy objects such as a TV on the unit.

Operation

- When the unit is not in use, turn the power off to conserve energy and to extend its life.
- Remove and store video cassettes after recording or playback.

Cleaning

- Clean the cabinet, panel and controls with a dry, soft cloth, or a soft cloth slightly moistened with a mild detergent solution.
- Do not use any type of solvent, such as alcohol or benzine.

Recording and Playback

- This VCR uses 8mm video format cassettes.
- This VCR records in SP mode (approximately 1.43 cm/second) and LP mode (approximately 0.72 cm/second).
- This VCR can play back in SP mode and LP mode .
- The PCM audio feature is not available on this VCR.
- You can neither record in the digital multi system nor play back a tape recorded in the digital multi system on other VCRs.

How to Use This Manual

This manual is divided into the following seven chapters: Introduction, Hookups and Getting Started, Preparation, Basic Operations, Advanced Operations, Editing, and Additional Information.

Chapter 1 Introduction

This chapter describes the principal features of the EV-S2000. "Identifying Parts and Controls" is useful to overview the functions you can take advantage of when operating the EV-S2000.

Chapter 2 Hookups and Getting Started

This chapter describes how to connect the EV-S2000 to a TV and/or an audio system. Connections for viewing cable TV programs are also explained in this section.

Chapter 3 Preparation

This chapter describes how to prepare the Remote Commander and how to set the date and time. "Presetting the Active Channels" and "Using the SET UP MENU" are also explained in this chapter.

Chapter 4 Basic Operations

This chapter provides information about the VCR's basic operations such as playing back a tape, recording a TV program and timer-activated recording. If you are already familiar with the basic operations, see the chapter "Advanced Operations".

Chapter 5 Advanced Operations

This chapter describes various kinds of functions you can take advantage of when operating the EV-S2000. Read this chapter after you become familiar with the EV-S2000.

Chapter 6 Editing

This chapter describes how to edit a video tape onto or from another VCR or video camera recorder.

Chapter 7 Additional Information

This chapter includes technical information which explains the Hi8 video system utilized in the EV-S2000 and its compatibility with existing video recorder decks. General setup information, a troubleshooting section and specifications are also included in this section. If you have any problems with installing or operating the EV-S2000, refer to the troubleshooting section first before calling your local Sony dealer.

Unpacking

Unpack all the items and check to confirm that you have everything listed below.

- Remote Commander RMT-V123
- Size AA (R6) batteries (2)
- External antenna connector (1)
- 75-ohm coaxial cable with F-type connectors (1)
- Audio/video connecting cable (3 phono to 3 phono) (1)
- S VIDEO connecting cable (1)

Conventions

This manual mainly explains operations using the Remote Commander. However, the buttons on the VCR with the same name or mark as those on the Remote Commander function exactly the same as those on the Remote Commander.

When you are reading through the manual, remember:

- Buttons and switches are shown in uppercase letters. Example: Press ▷ PLAY.
- Buttons and switches on the Remote Commander to be used during operation are outlined and not shaded in the illustration.
- Buttons and switches on the VCR to be used during operation are outlined and called out.

Overview

High quality picture and sound

- **Hi8 video system**
  The Hi8 video format features 400 lines of horizontal resolution, enabling you to obtain a high video quality even for dubbing.
- **Hi-Fi stereo system**
  Hi-Fi stereo sound can be recorded and gives a live stereo sound atmosphere.

Functions

- **Voice boost function**
  When playing back a tape recorded with a camcoder, enhances a voice portion of the sound and reduces "unwanted' background noise like wind so that it's easier to listen to conversation.
- **Extended timer recording**
  Lets you preset for recording of up to six TV programs in a month.

On-screen display

- **On-screen display**
  Displays tape counter, tape recording speed and operation mode on the TV screen.
- **TIMER SET/CHECK display**
  Lets you set and check timer recording settings by referring to the TV screen.
- **ON SCREEN HELP messages**
  Gives a message on screen with a beep tone to warn that you have attempted an incorrect operation.

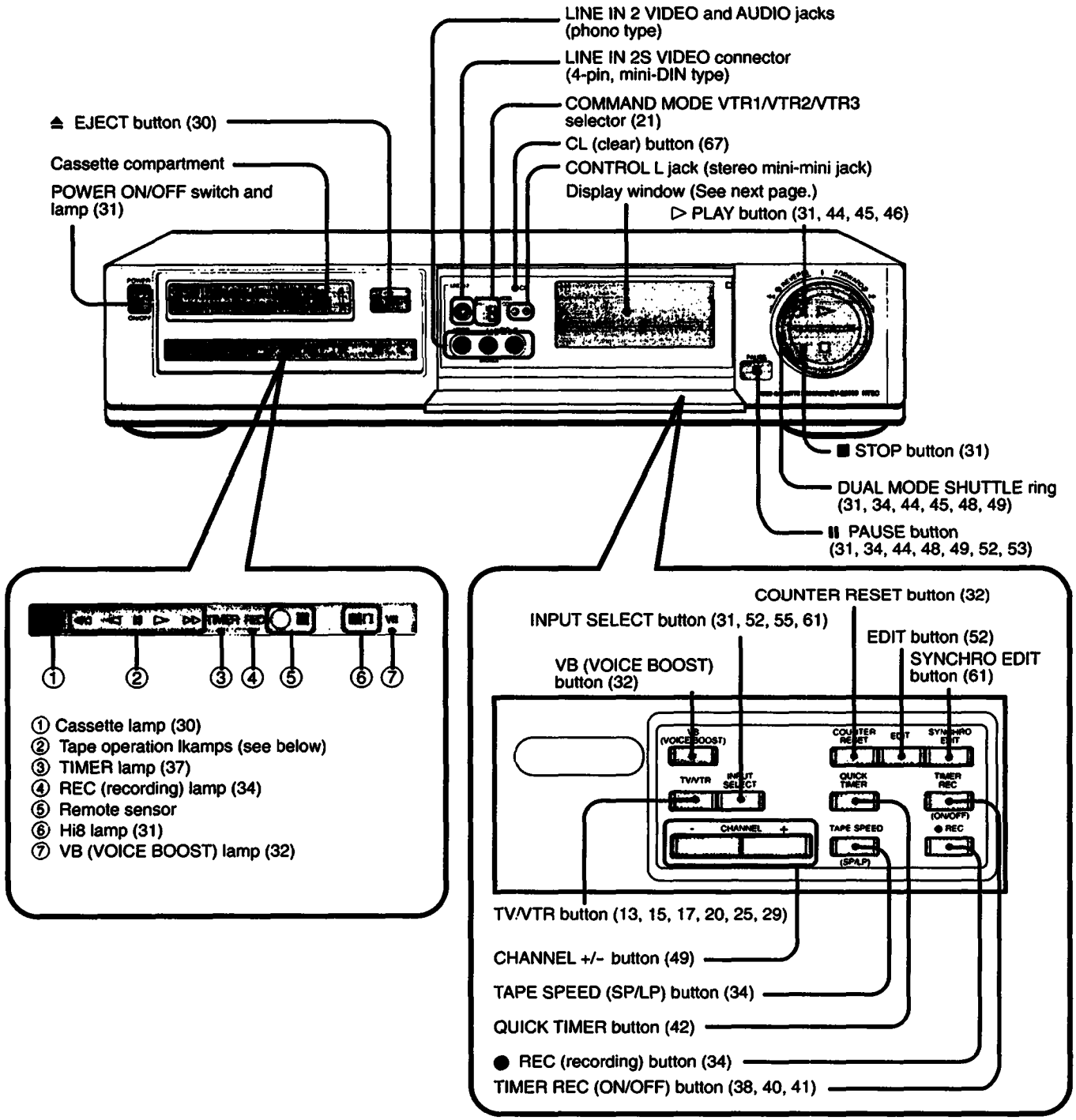
Editing

- **DUAL MODE SHUTTLE ring**
  Lets you find a scene by playing at various speeds in forward and reverse directions.
- **CONTROL L (LANC) jack**
  Lets you easily connect another video equipment such as a video camera recorder (camcorder). It lets you simultaneously control both devices for bi-directional synchronized editing.
- **CONTROL S INPUT jack**
  Lets you remote control this VCR using other Sony video equipment or a Sony TV with a CONTROL S OUTPUT jack
- **Input connectors on the front panel**
  Lets you connect a video camera recorder (camcorder).

Identifying the Parts and Controls

Front Panel

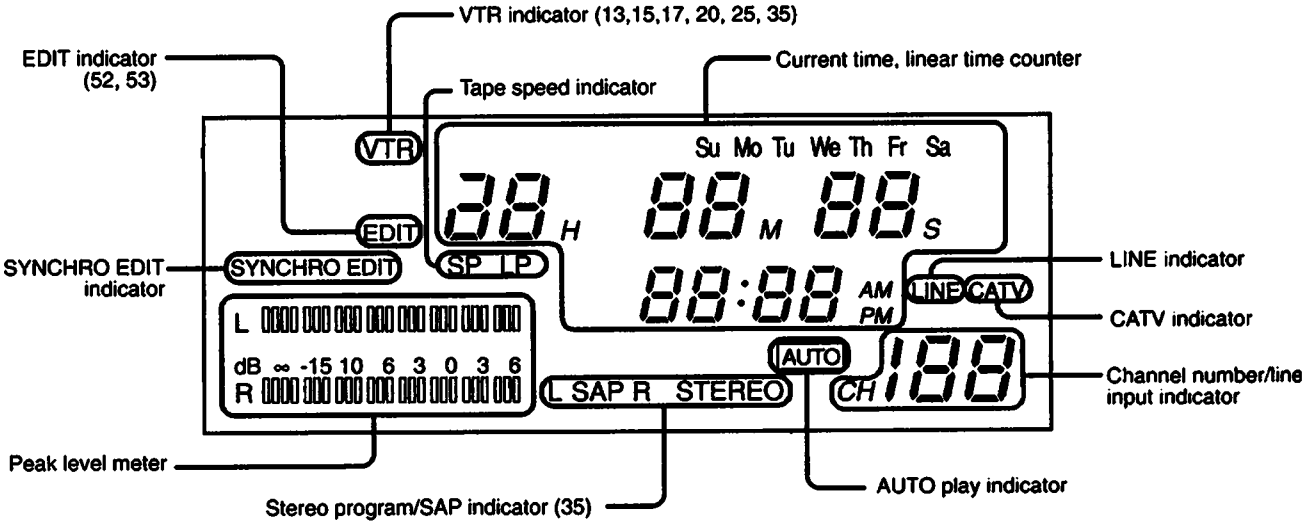
The function of each control is explained on the page indicated in parentheses ( ).


LINE IN 2 VIDEO and AUDIO jacks (phono type)
LINE IN 2S VIDEO connector (4-pin, mini-DIN type)
COMMAND MODE VTR1/VTR2/VTR3 selector (21)
CL (clear) button (67)
CONTROL L jack (stereo mini-mini jack)
Display window (See next page.)
▷ PLAY button (31, 44, 45, 46)
⏏ EJECT button (30)
Cassette compartment
POWER ON/OFF switch and lamp (31)
■ STOP button (31)
DUAL MODE SHUTTLE ring (31, 34, 44, 45, 48, 49)
❚❚ PAUSE button (31, 34, 44, 48, 49, 52, 53)
① Cassette lamp (30)
② Tape operation lkamps (see below)
③ TIMER lamp (37)
④ REC (recording) lamp (34)
⑤ Remote sensor
⑥ Hi8 lamp (31)
⑦ VB (VOICE BOOST) lamp (32)
COUNTER RESET button (32)
INPUT SELECT button (31, 52, 55, 61)
EDIT button (52)
SYNCHRO EDIT button (61)
VB (VOICE BOOST) button (32)
TV/VTR button (13, 15, 17, 20, 25, 29)
CHANNEL +/- button (49)
TAPE SPEED (SP/LP) button (34)
QUICK TIMER button (42)
● REC (recording) button (34)
TIMER REC (ON/OFF) button (38, 40, 41)

REC	Recording	◄	Playback, double speed, slow playback (reverse)	► ►►	Picture search, locked picture search (forward)
REC ❚❚	Recording pause	►►	Fast forward	◄◄ ►	Picture search, locked picture search (reverse)
►	Playback, double speed, slow playback (forward)	◄◄	Rewind	◄◄ ►► AUTO	AUTO play *AUTO menu indicator is in the display window*

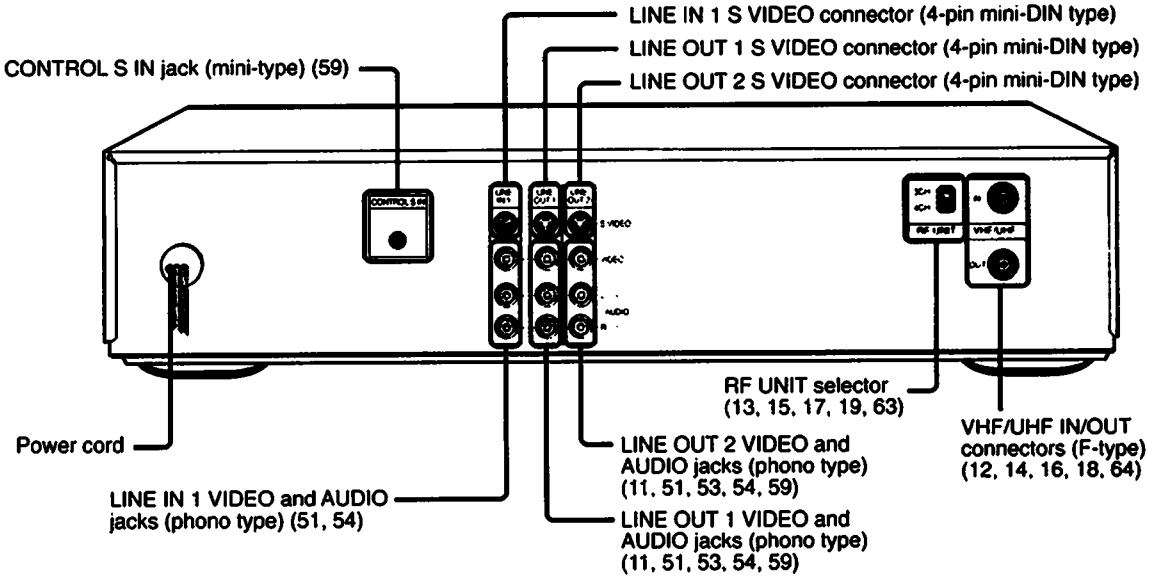
Display Window

Each indication is explained on the page indicated in parentheses ( ).



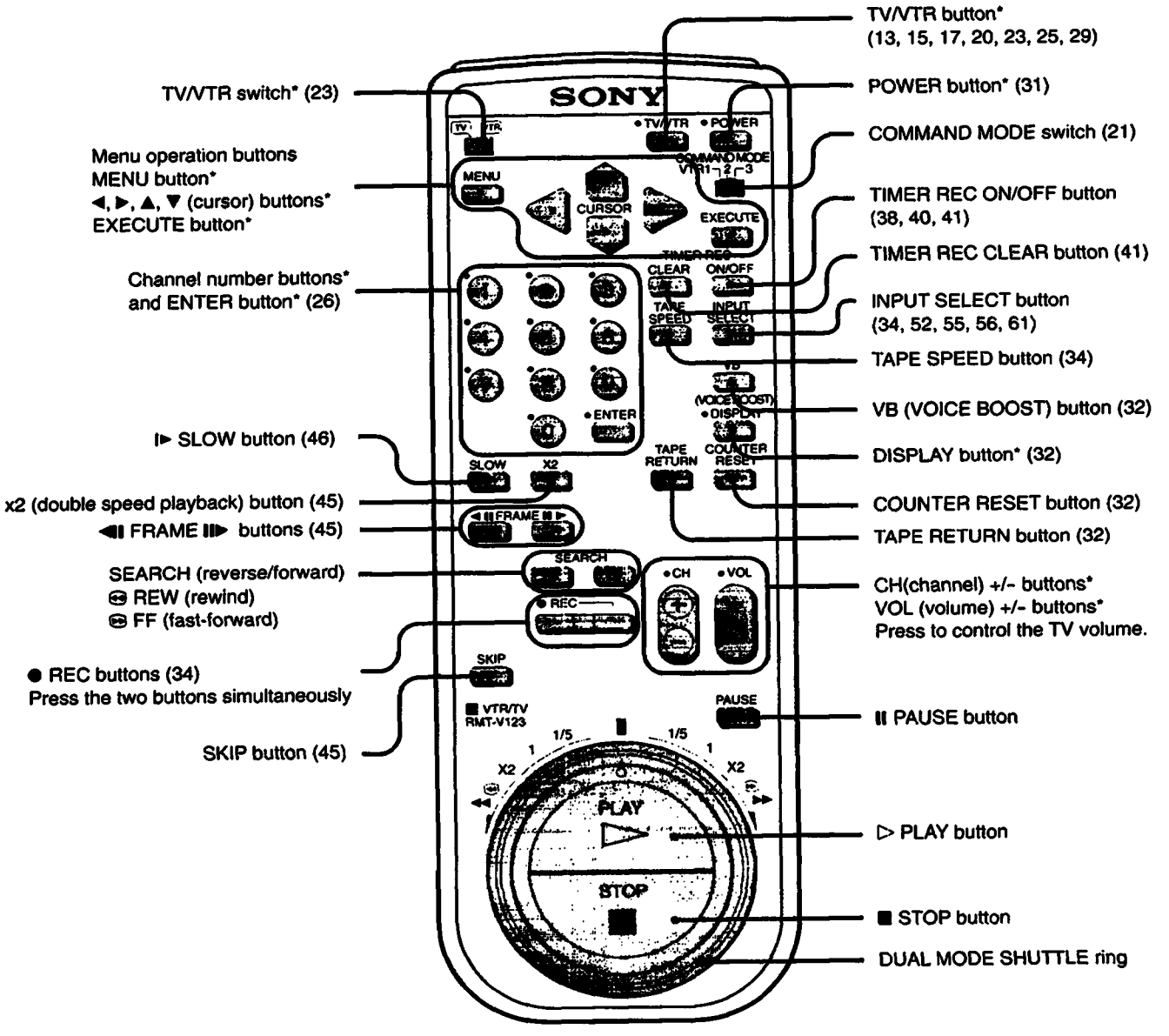
Rear Panel

The function of each control is explained on the page indicated in parentheses ( ).


LINE IN 1 S VIDEO connector (4-pin mini-DIN type)
LINE OUT 1 S VIDEO connector (4-pin mini-DIN type)
LINE OUT 2 S VIDEO connector (4-pin mini-DIN type)
CONTROL S IN jack (mini-type) (59)
RF UNIT selector (13, 15, 17, 19, 63)
VHF/UHF IN/OUT connectors (F-type) (12, 14, 16, 18, 64)
Power cord
LINE OUT 2 VIDEO and AUDIO jacks (phono type) (11, 51, 53, 54, 59)
LINE IN 1 VIDEO and AUDIO jacks (phono type) (51, 54)
LINE OUT 1 VIDEO and AUDIO jacks (phono type) (11, 51, 53, 54, 59)

Remote Commander

The function of each control is explained on the page indicated in parentheses ( ).



* When the TV/VTR switch is set to TV, you can use the buttons marked with an asterisk to control the TV set.

Hookups and Getting Started

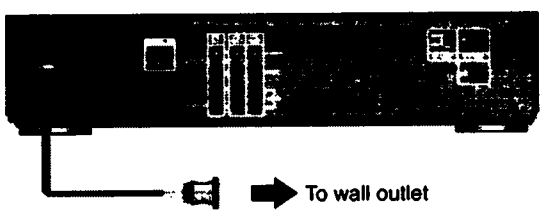
Before you can use your VCR for the first time, you need to connect it to your TV and set it up to receive programs for viewing and recording. This section explains how to hook up, set up, and operate your VCR so that you can start enjoying it right away. There are, however, many types of TVs available and many different ways in which your TV can be hooked up. As a result, this manual describes several ways your VCR can be connected.

To hook up your VCR so that it works best for you, first scan through this section to find the diagram that best illustrates the way your TV is presently connected (antenna or cable/cable box). And then use the accompanying diagrams and procedures to complete your VCR's connections.

When	See
Your TV has audio/video (A/V) inputs	**Hookup 1** Audio/Video Hookup (page 11)
Your TV doesn't have audio/video (A/V) inputs	**Hookup 2** Antenna Hookup (page 12)
You have cable, and record only unscrambled channels	**Hookup 3** Simple Cable Hookup (page 14)
You have cable, and record scrambled and unscrambled channels	**Hookup 4** Alternate Cable Hookup (page 16)
You have cable, and use A/B switch	**Hookup 5** Advanced Cable Hookup (page 18)

After you've completed the connections, follow the instructions for setup. (During setup, if you need more details of the procedures described, page numbers are provided where you can find complete, set-by-step instructions.)
After you've completed the setup, you're ready to use your VCR. Follow the instructions provided in "To watch TV," "To Watch the VCR," "To Record a Program Using the Timer," for your specific hookup. (Again, if you need step-by-step instructions, page numbers are provided where you can find these instructions.)

Before making the connections, check the following points:
- Turn off the power of the VCR and TV.
- Do not connect the AC power cord until all of the connections are completed.



- Make connections firmly. Loose connections may cause picture distortion.
- If your TV doesn't match any of the examples provided, consult your nearest Sony dealer or qualified technician.

Caution
Connections between the VCR VHF/UHF OUT connector and the antenna terminals of a TV receiver should be made only as shown in the instructions. Failure to do so may result in operation that violates the regulations of the Federal Communications Commission regarding the use and operation of RF devices. Never connect the output of the recorder to an antenna or make simultaneous (parallel) antenna and recorder connections at the antenna terminals of your receiver.

NOTE TO CATV SYSTEM INSTALLER IN THE USA
This reminder is provided to call the cable TV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Caution
Do not place a TV on top of the VCR. The playback picture may become distorted.

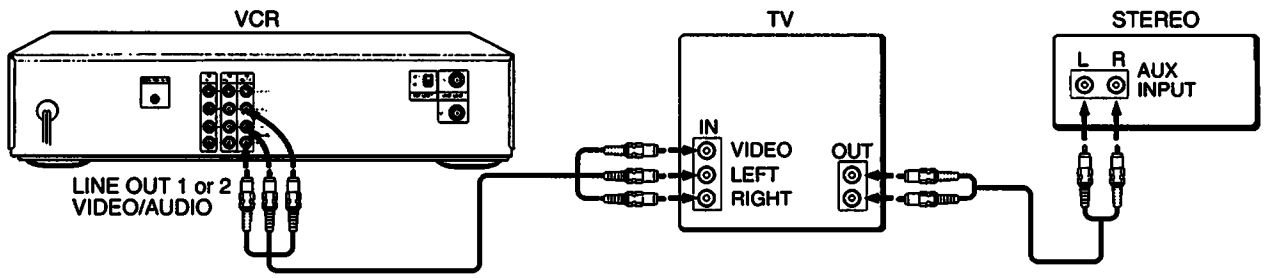
Hookup 1

Audio/Video (A/V) Hookup

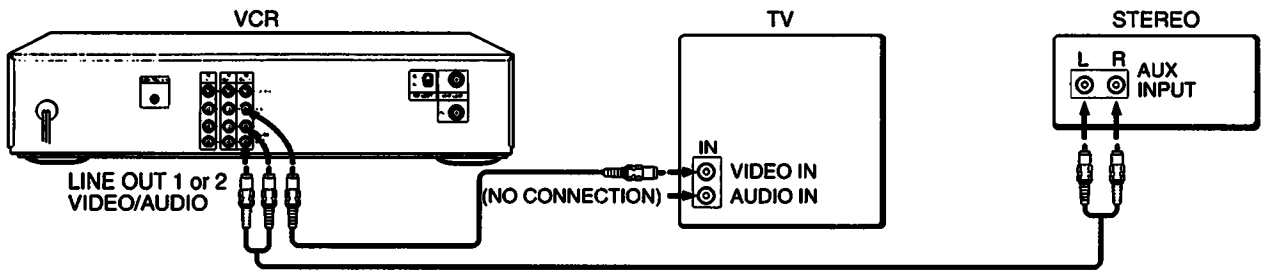
If your TV has audio/video (A/V) input jacks, you will get a better picture and sound if you hook up your VCR using these connections. In addition, for a true "home theater" experience, you should connect the audio outputs of your VCR or TV to your stereo system. If your TV doesn't have A/V inputs, see the following pages for antenna or cable hookup.

If you only wish to play back movies, you're finished after you've made these connections. If you want to record programs off the air or off your cable TV system, please make the A/V hookup on this page first, then proceed to the following pages for antenna or cable hookup

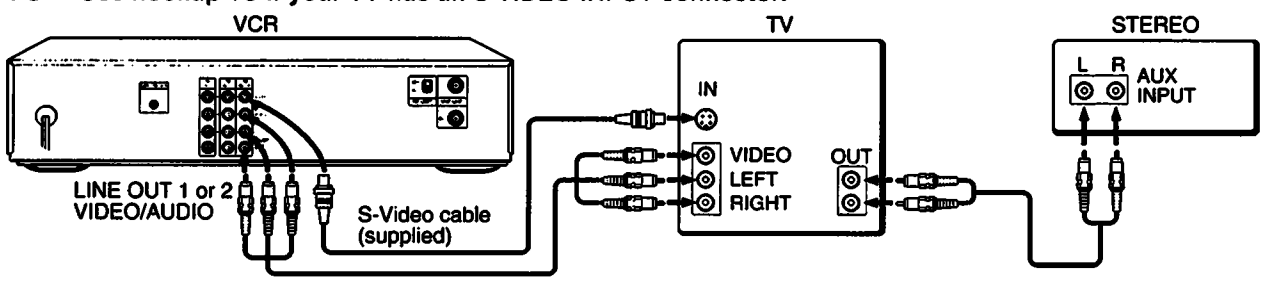
1A Use hookup 1A if your TV is a stereo type.



1B Use hookup 1B if your TV does not have stereo jacks.



1C Use hookup 1C if your TV has an S VIDEO INPUT connector.

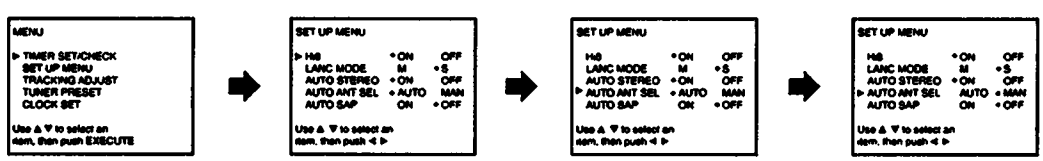


After you've hooked up your TV using the A/V connections, use the following procedure to set up and use the VCR with your TV.

A/V Setup and Operation

Set the AUTO ANT SEL setting to MAN.

Press MENU. → Select SET UP MENU. → Select AUTO ANT SEL. → Set to MAN.



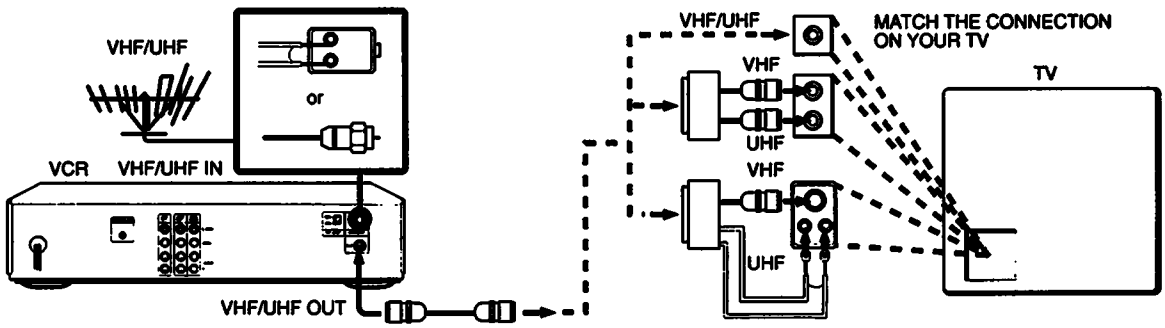
Details are on page 28.

Hookup 2

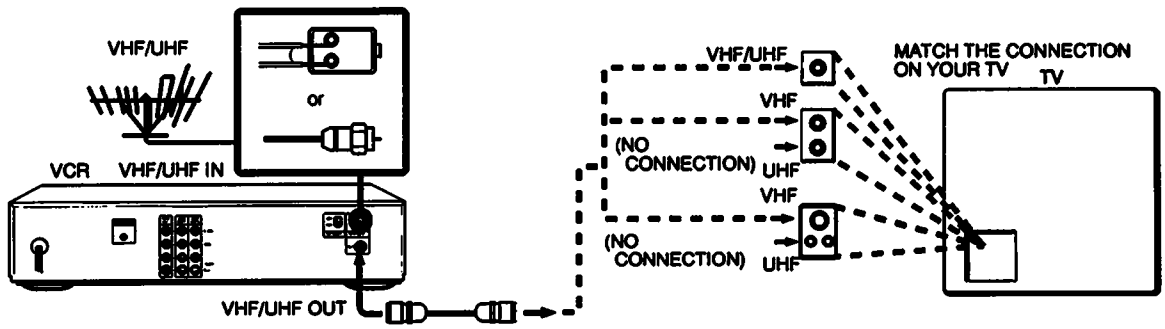
Antenna Hookup

Make the following connections if you're using an antenna (not a cable TV).

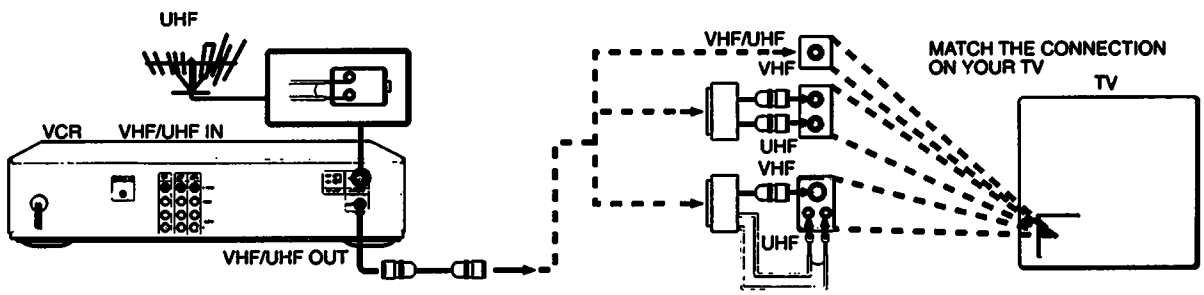
2A Use hookup 2A for a VHF/UHF antenna (you get Ch 2–13 and Ch 14 or higher).



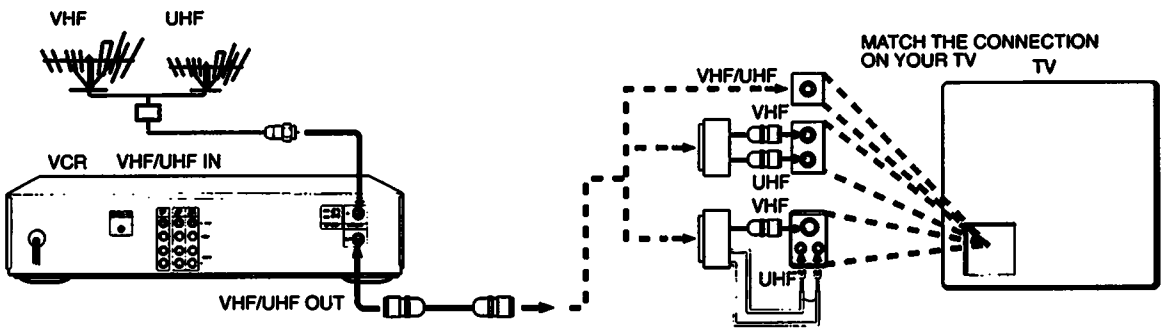
2B Use hookup 2B for VHF only (you get CH 2–13 only).



2C Use hookup 2C for UHF only (you get CH 14 or higher).



2D Use hookup 2D if you're using separate VHF and UHF antennas.



Details are on pages 64 and 65.

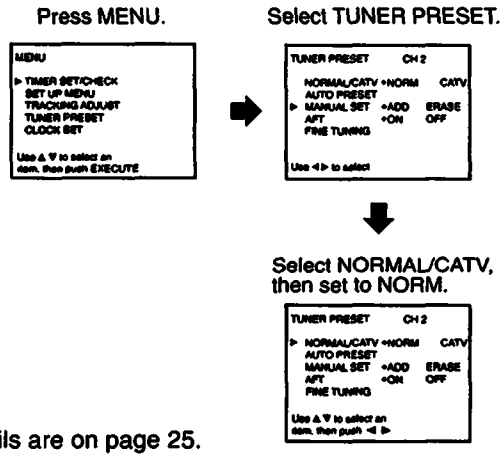
VCR Setup (Antenna)

1 Set the RF UNIT on the VCR's rear panel to 3CH or 4CH.
If you made A/V connections, skip this adjustment.

Set to whichever channel is not used in your area.
If neither 3 nor 4 is used, pick either channel.

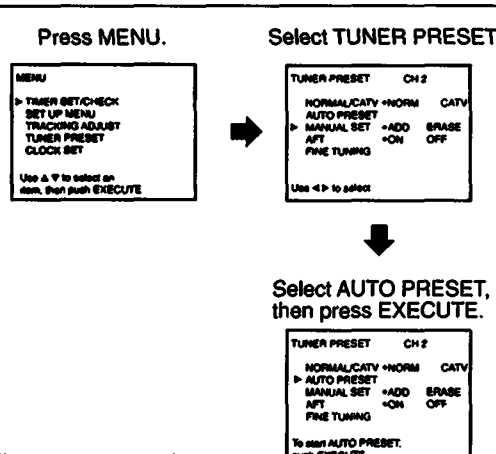
Details are on page 63.

2 Set NORMAL/CATV to NORM.



Details are on page 25.

3 Preprogram the channels into the VCR.

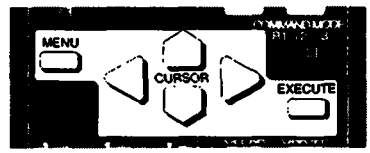


Details are on page 25 .

Clock Setting

Before this setting, you have to prepare the Remote Commander. (See page 21.)

1 Press MENU.



2 Press ▲ or ▼ to move the cursor (▶) to CLOCK SET.

3 Press EXECUTE.

4 Press ▲ or ▼ to set the flashing position, press ◀ or ▶ to move the flashing position.

5 Press EXECUTE to start the clock.

Details are on page 24.

To Watch TV

1 Turn your VCR off, or press the VCR's TV/VTR until the VTR indicator in the display window goes off.
2 Tune TV normally.

To Watch the VCR

1 Tune the TV to channel 3 or 4, whichever you set on the back of the VCR. (If you made the A/V connections on page 11, set your TV to the A/V input instead.
2 Insert a cassette and press ▷ PLAY.
3 If there's no picture on your TV, press the VCR's TV/VTR until the VTR indicator appears in the VCR's display.

Details are on page 31.

To Record a Program Using the Timer

1 Insert a cassette.
2 Press MENU.
3 Select TIMER SET/CHECK.
4 Press EXECUTE.
5 Set DATE, ON time, OFF time, CHannel and tape recording speed.
6 Press EXECUTE and then TIMER REC ON/OFF.

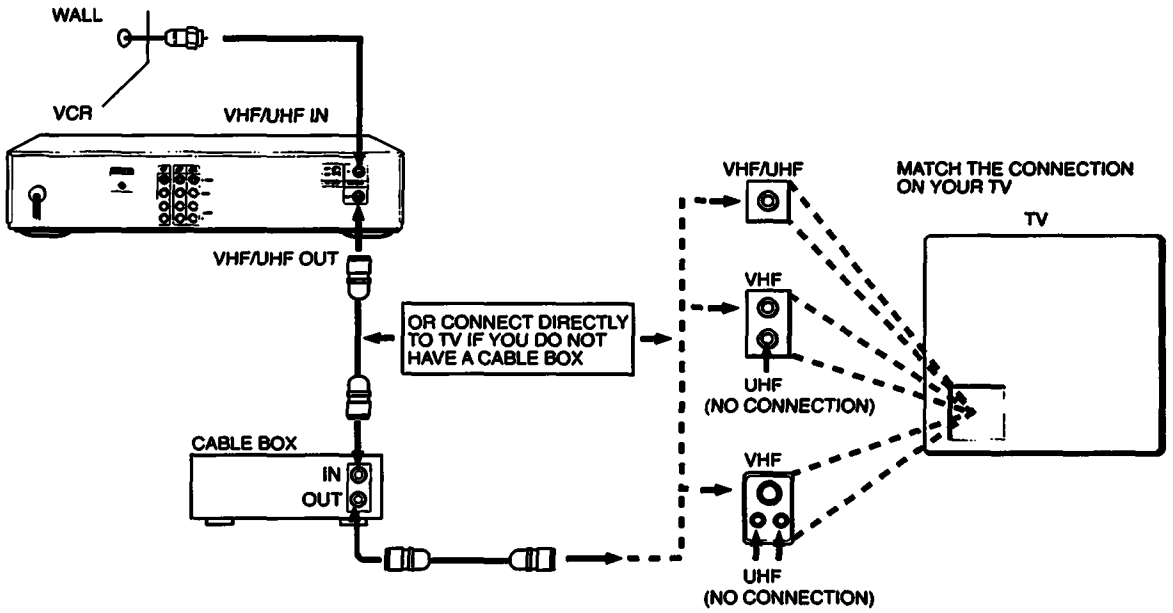
Details are on pages 36 and 37.

Hookup 3

Simple Cable Hookup

Recommended Use:
Since this is the simplest hookup, we recommend that you try this hookup first.
If you cannot record the channels you want, you'll need to change your hookup to one of the choices on the following pages, or contact your cable company for assistance.

Background
This VCR can record virtually any unscrambled cable channel. Some cable systems "scramble" specific channels, usually premium or pay-per-view channels. You will not be able to record scrambled channels with this hookup.



What You Can and Can't Do With This Hookup

What You Can Do
- Record any unscrambled channel directly, without using a cable box.

What You Can't Do
- Record scrambled channels that require a cable box.

VCR Setup (Simple Cable)

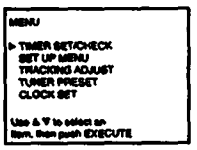
1 Set the RF UNIT on the VCR's rear panel to 3CH or 4CH.
If you made A/V connections, skip this adjustment.

Set to whichever channel is not used in your area.
If neither 3 nor 4 is used, pick either channel.

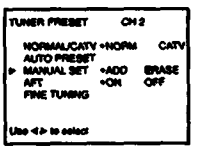
Details are on page 63.

2 Set NORMAL/CATV to CATV.

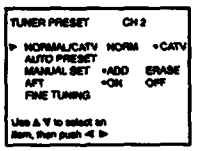
Press MENU.



Select TUNER PRESET.



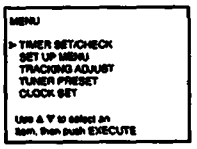
Select NORMAL/CATV, then set to CATV.



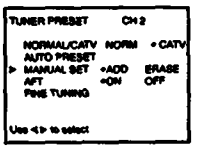
Details are on page 25.

3 Preprogram the channels into the VCR.

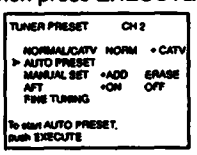
Press MENU.



Select TUNER PRESET.



Select AUTO PRESET, then press EXECUTE.

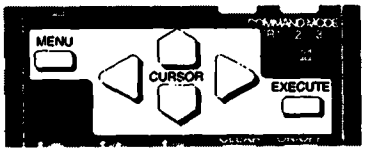


Details are on page 25.

Clock Setting

Before this setting, you have to prepare the Remote Commander. (See page 21.)

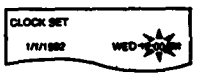
1 Press MENU.



2 Press ▲ or ▼ to move the cursor (▶) to CLOCK SET.

3 Press EXECUTE.

4 Press ▲ or ▼ to set the flashing position, press ◀ or ▶ to move the flashing position.



5 Press EXECUTE to start the clock.

Details are on page 24.

To Watch TV

1 Turn your VCR off, or press the VCR's TV/VTR until the VTR indicator in the display window goes off.

2 Select the channel with your cable box (if you have one), or directly tune with your TV (If you don't).

To Watch the VCR

1a If you didn't use the A/V input:
- Turn on the cable box.
- Select channel 3 or 4 on the **cable box** (whichever you set on the back of the VCR).
- Select the output channel of the cable box (usually 2, 3 or 4) on your TV.

1b If you made the A/V connections on page 11: Set your TV to the A/V input.

2 Insert a cassette and press ▷ PLAY.

Details are on page 31.

To Record a Program Using the Timer

1 Insert a cassette.

2 Press MENU.

3 Select TIMER SET/CHECK.

4 Press EXECUTE.

5 Set DATE, ON time, OFF time, CHannel and tape recording speed.

6 Press EXECUTE and then TIMER REC ON/OFF.

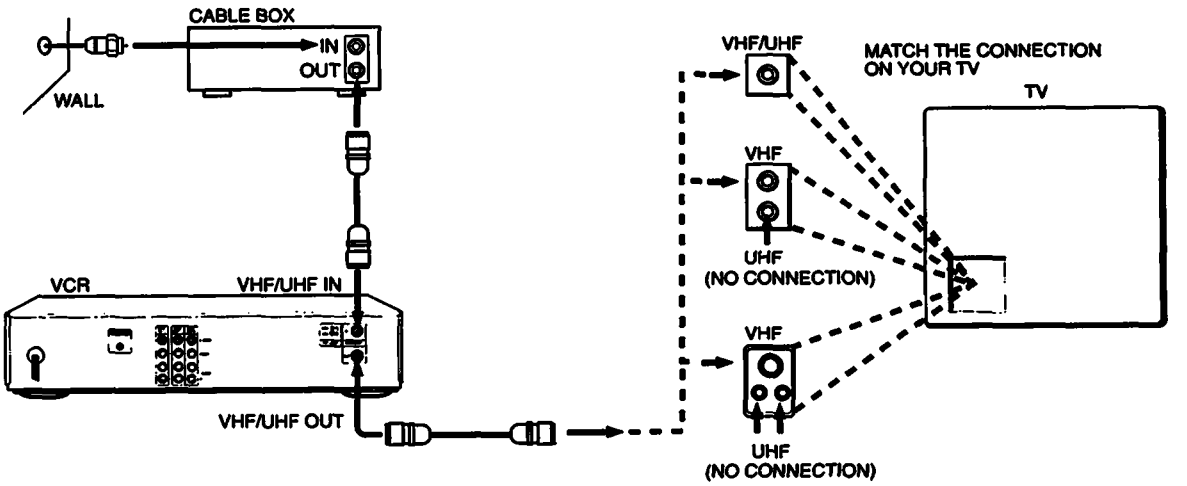
Details are on pages 36 and 37.

Hookup 4

Alternate Cable Hookup

Recommended Use:
This hookup will allow you to record either scrambled or unscrambled channels, however, you will have to set the channel on the cable box for each program you want to record. If your cable system scrambles all or most channels, you **must** use this hookup. If your cable system only scrambles a few channels, you may prefer **Hookup 3** or **5** (on pages 14 and 18, respectively). Please note that **Hookup 3** will not allow you to record scrambled channels.
Hookup 5 will allow you to record either scrambled or unscrambled channels, but will require that you purchase a few extra parts at your local electronics store.

Background
This VCR can record virtually any unscrambled cable channel. Some cable systems "scramble" specific channels, usually premium or pay-per-view channels. Although this hookup will also allow you to record these scrambled channels, you must use the cable box rather than the VCR to select channels.



What You Can and Can't Do With This Hookup

What You Can Do
- Record any channel by selecting the channel on the cable box.

What You Can't Do
- Record with the cable box turned off.
- Record by selecting channels directly from the VCR.
- Record one channel while watching another channel.

[illegible] (Alternate cable)

1 Set the RF UNIT on the VCR's rear panel to 3CH or 4CH.
If you made A/V connections, skip this adjustment.

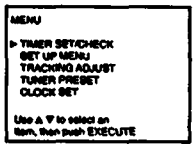
Set to whichever channel is not used in your area.
If neither 3 nor 4 is used, pick either channel.

Details are on page 63.

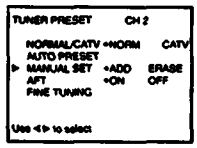
2 Set on your cable box .

3 Preprogram the channels into the VCR.

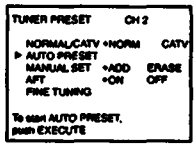
Press MENU.



Select TUNER PRESET.



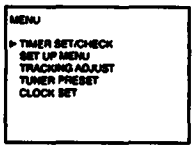
Select AUTO PRESET, then press EXECUTE.



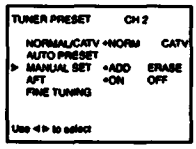
Details are on page 25.

4 Add the cable box output channel (usually 2, 3 or 4).

Press MENU.

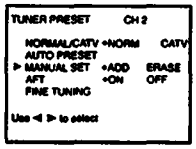


Select TUNER PRESET.



Select MANUAL SET.

Add the cable box output channel (usually 2, 3 or 4). For example, press 3 and ENTER, set to ADD, then press EXECUTE.

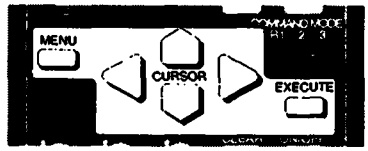


Details are on page 25.

[illegible] Setting

Before this setting, you have to prepare the Remote Commander. (See page 21.)

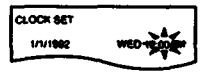
1 Press MENU.



2 Press ▲ or ▼ to move the cursor (▶) to CLOCK SET.

3 Press EXECUTE.

4 Press ▲ or ▼ to set the flashing position, press ◀ or ▶ to move the flashing position.



5 Press EXECUTE to start the clock.

Details are on page 24.

To Watch TV

1 Turn your VCR off, or press the VCR's TV/VTR until the VTR indicator in the display window goes off.
2 Switch on your cable box.
3 Tune the TV to the cable box output channel (usually 2, 3, or 4).
4 Select the channel that you want to watch with your cable box.

To Watch the VCR

1 Tune the TV to channel 3 or 4, (or to A/V input if you made A/V connections).
2 Insert a cassette and press ▷ PLAY.

Details are on page 31.

To Record a Program Using the Timer

1 Insert a cassette.
2 Switch on the cable box.
3 Select the channel you wish to record on the cable box.
4 Press MENU, and select TIMER SET/CHECK, and press EXECUTE.
5 Set DATE, ON time, OFF time, CHannel and tape recording speed. The channel number must be the same as the cable box output channel.
6 Press EXECUTE and then TIMER REC ON/OFF.
7 Leave the cable box on.

Details are on pages 36 and 37.

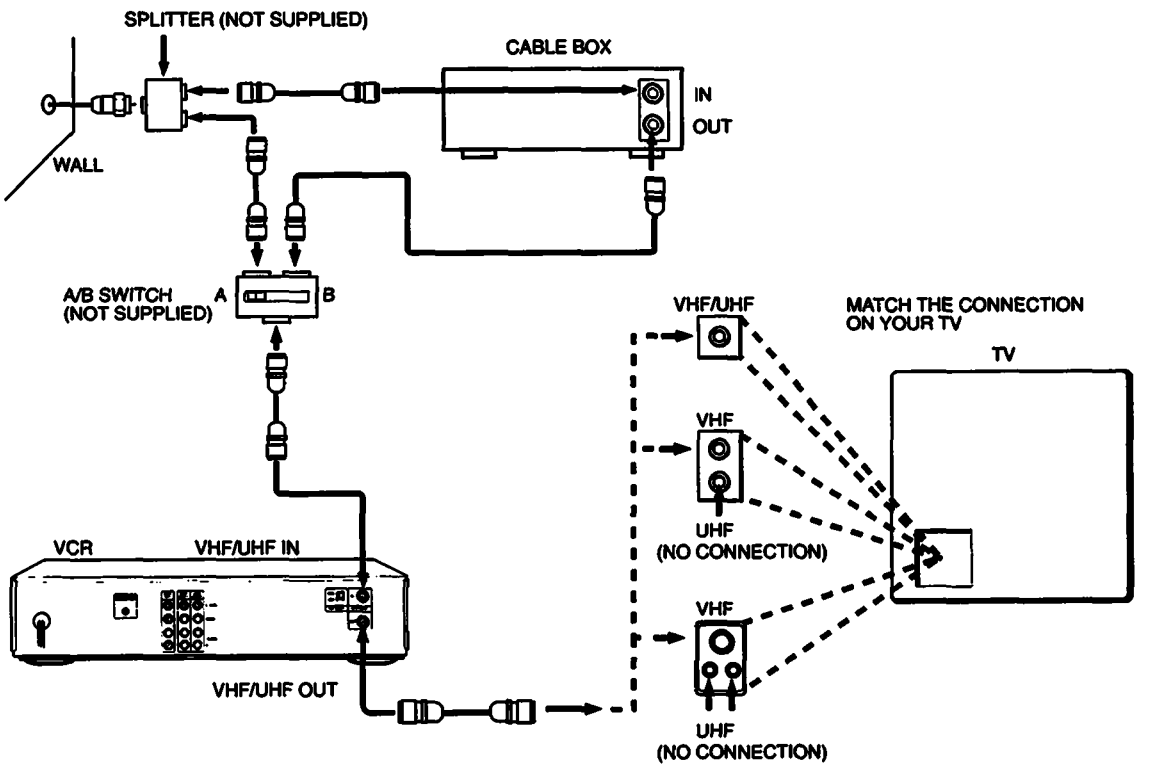
Hookup 5

Advanced Cable Hookup

Recommended Use:
By using the A/B switch, this hookup allows you to record most channels directly from the VCR (position "A"). You only use position "B" and the cable box if you want to record a "scrambled" channel. This gives you the most convenient operation of the VCR.

Background
This VCR can record virtually any unscrambled cable channel. Some cable systems "scramble" specific channels, usually premium or pay-per-view channels. This hookup will allow you to record unscrambled channels by selecting "A" on the A/B switch, and tuning the channel directly on your VCR. To record "scrambled channels, select "B" on the A/B switch, and select the channel using the cable box. If your cable system scrambles all or most channels, you must use the alternate cable hookup **(Hookup 4)** on page 16.

● **Only one cable is supplied with your VCR. Prepare additional cables for connection.**



What You Can and Can't Do With This Hookup

What You Can Do
- Record unscrambled channels directly with the A/B switch in the "A" position.
- Record scrambled channels through the cable box with the A/B switch in the "B" position.

What You Can't Do
- Record scrambled channels directly without the cable box.
- Watch a different channel while you are recording a scrambled channel.
- Record scrambled channels through the cable box with the A/B switch in the "A" position.

VCR Setup (Advanced Cable)

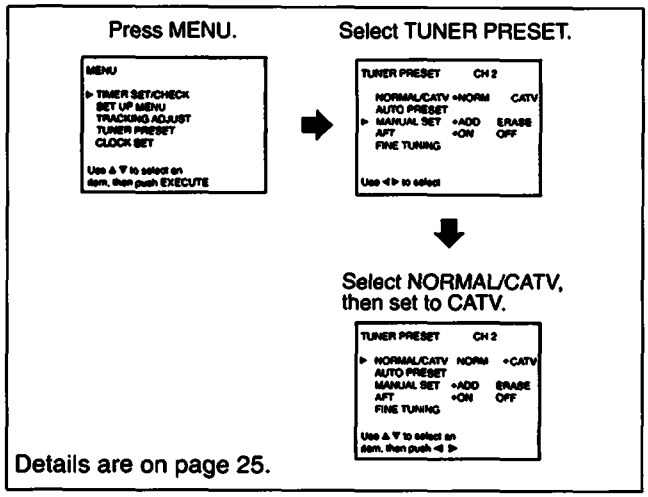
1 Set the RF UNIT on the VCR's rear panel to 3CH or 4CH.
If you made A/V connections, skip this adjustment.

Set to whichever channel is not used in your area.
If neither 3 nor 4 is used, pick either channel.

Details are on page 63.

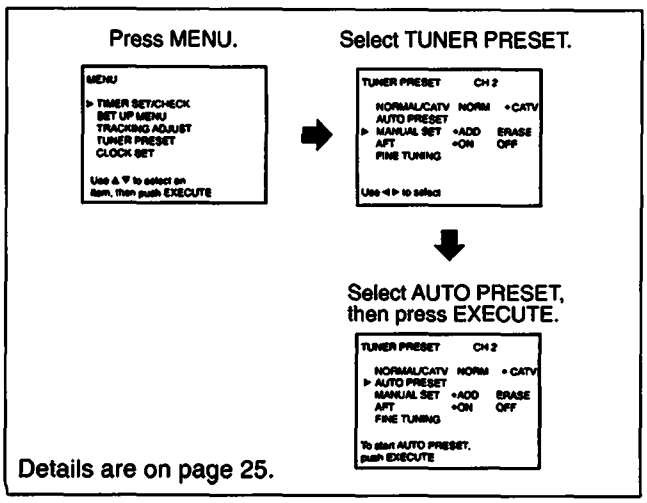
2 Set the A/B switch to "A".

3 Set NORMAL/CATV to CATV.



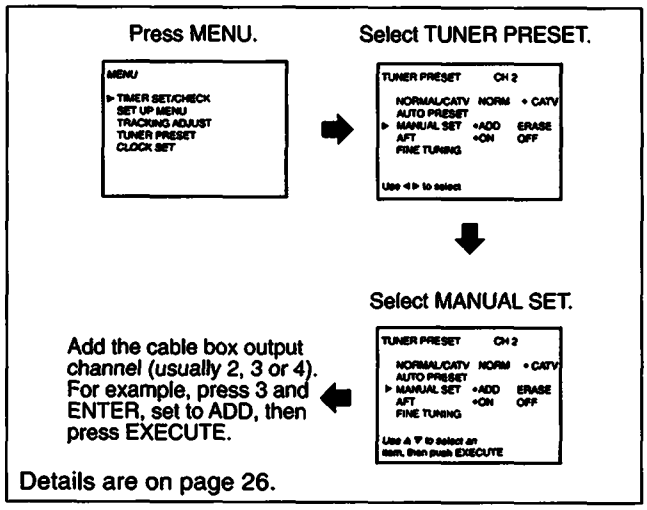
Details are on page 25.

4 Preprogram the channels into the VCR.



Details are on page 25.

5 Add the cable box output channel (usually 2, 3, or 4).


Press MENU.
Select TUNER PRESET.
Select MANUAL SET.
Add the cable box output channel (usually 2, 3 or 4). For example, press 3 and ENTER, set to ADD, then press EXECUTE.

Details are on page 26.

Clock Setting

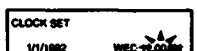
Before this setting, you have to prepare the Remote Commander. (See page 21.)

1 Press MENU.

2 Press ▲ or ▼ to move the cursor (▶) to CLOCK SET.

3 Press EXECUTE.

4 Press ▲ or ▼ to set the flashing position, press ◀ or ▶ to move the flashing position.



5 Press EXECUTE to start the clock.

Details are on page 24.

To Watch TV

1 Turn your VCR off, or press TV/VTR until the VTR indicator in the display window goes off.

2 Set the A/B switch to "B".

3 Switch on your cable box.

4 Tune the TV to the cable box output channel (usually 2, 3, or 4).

5 Select the channel you want to watch with your cable box.

6 After watching the TV, please remember to return the A/B switch and cable box channel to the correct position.

To Watch the VCR

1 Tune the TV to channel 3 or 4 (or to A/V input if you made A/V connections).

2 Insert a cassette and press ▷ PLAY.

Details are on page 31.

To Record a Program Using the Timer

● **Unscrambled Channels**

1 Insert a cassette.

2 Switch the A/B switch to "A".

3 Press MENU and select TIMER SET/CHECK.

4 Press EXECUTE.

5 Set DATE, ON time, OFF time, CHannel and tape recording speed.

6 Press EXECUTE and then press TIMER REC ON/OFF.

7 Leave the A/B switch at "A".

● **Scrambled Channels**

1 Insert a cassette.

2 Switch the A/B switch to "B".

3 Switch on your cable box.

4 Select the channel you want to record on the cable box.

5 Press MENU and select TIMER SET/CHECK.

6 Press EXECUTE.

7 Set DATE, ON time, OFF time, CHannel and tape recording speed. The channel number must be the same as the cable box output channel.

8 Press EXECUTE and then press TIMER REC ON/OFF.

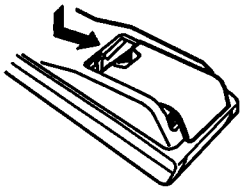
9 Leave the A/B switch at "B".

Details are on pages 36 and 37.

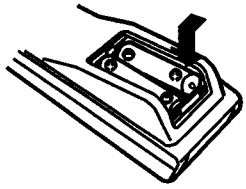
Preparing the Remote Commander

Inserting Batteries

1



2



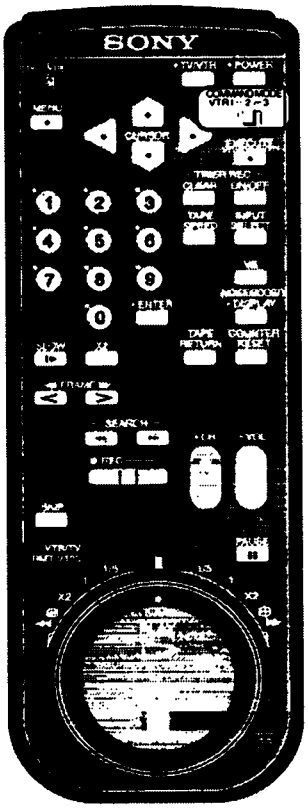
1 Open the lid.

2 Insert two size AA (IEC designation R6) batteries with the polarity lined up correctly.

3 Close the lid.

Notes on handling the batteries

- With normal use, the batteries should last for approximately six months.
- If you do not use the Remote Commander for an extended period of time, remove the batteries to avoid possible damage from battery leakage.
- Do not use a new battery with an old one, or different types of batteries.



Setting the Command Mode

You can control other Sony video equipment using this Remote Commander by setting the Command Mode to the same position. You can select three different settings for Command Mode.

1 Set the COMMAND MODE VTR 1/2/3 selector on the front panel of the VCR to VTR 2.

2 Set the COMMAND MODE VTR 1/2/3 selector on the Remote Commander to VTR 2.

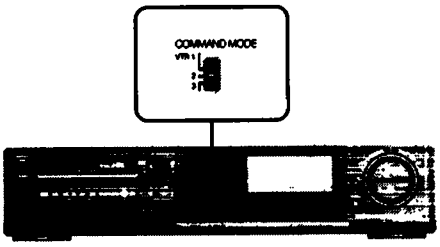
Controlling Other Sony Video Equipment

1 Set the COMMAND MODE VTR 1/2/3 selector on the Remote Commander to VTR 1, VTR3 or whichever it wasn't selected for this VCR.

2 Set the COMMAND MODE selector of any other video equipment to the same setting you selected in step 1.

If other Sony video equipment does not have a COMMAND MODE selector, you can control such equipment using the following settings:

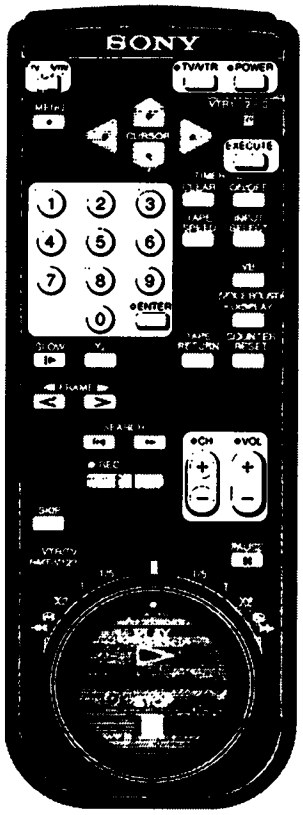
Infrared remote controlled Sony Betamax VCRs: VTR 1
(Some of them may not be controlled at this setting.)
Sony 8mm format VCRs: VTR 2
Sony VHS format VCRs: VTR 3



Manufactures and Their Code Numbers

Your Remote Commander is preprogrammed for use with a number of different TV sets. If your TV is listed in the table below, set the appropriate manufacture's code prior to using the Remote Commander.

Manufacturer	Code Number	Manufacturer	Code Number
Sony	1	Panasonic	6
Akai	4	Philco	3, 4
AOC	4	Philips	8
Centurion	12	Pioneer	16
Coronado	3	Portland	3
Curtis-Mathes	12	Quasar	6
Daytron	12	Radio Shack	5, 14
Emerson	3, 4, 14	RCA	4, 10
Fisher	11	Sampo	12
General Electric	6, 10	Samsung	3, 12, 17
Gold Star	3, 4, 17	Sanyo	11
Hitachi	2, 3	Scott	12
J.C.Penney	4, 12	Sears	7, 11
JVC	9	Sharp	3, 5, 18
KMC	3	Sylvania	8, 12
KTV	3, 4	Teknika	3, 8, 14
Magnavox	3, 8, 12, 17	Toshiba	7
Marantz	4, 13	Wards	3, 4, 12
MGA/Mitsubishi	4, 12, 13	Yorx	12
NEC	4, 12	Zenith	15



Setting the Manufacture's Code Number

Some non-Sony TVs can be controlled with the Sony Remote Commander. Each manufacturer uses a different control code, so If you set your Remote Commander to a different code it may control the other TV. However, since all manufactures do not use the same system, pay special attention to the notes below. The following 2 step procedure explains how to change the control code used by your Remote Commander — refer to the code number list (page 22) for the appropriate code.

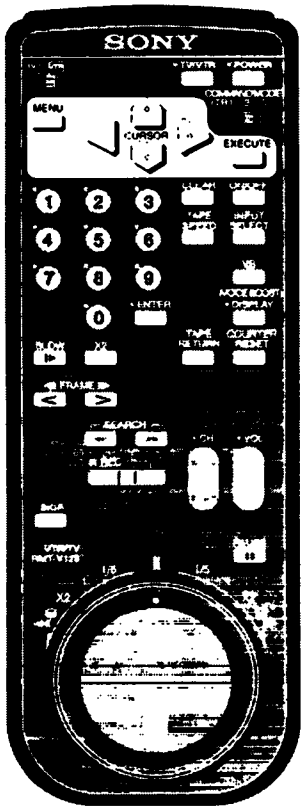
1 Set the TV/VTR switch to TV.

2 While pressing EXECUTE, press the manufacturer's code number and ENTER. You can now use the POWER, VOL(volume) +/–, CH(channel) +/– and the TV/VTR buttons on your Remote Commander to operate the TV.

Notes:

- The TV/VTR button may not function, depending on the manufacturer. If this problem occurs, use your TV's own remote control unit.
- If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.
- If you enter a new code number, the code number previously entered will be erased.
- If you release the EXECUTE button before pressing the ENTER button, the setting will be cancelled.
- Some manufacturers may use a different remote control system from the one programmed to work with your VCR. If this is the case and you are unable to operate the TV with your Remote Commander, use the TV's own remote control unit instead.
- When you replace the batteries in the Remote Commander the code number automatically resets to 1 (Sony). Reset the appropriate code number if you are operating a non-Sony TV.

Setting the Time and Date



You can set the time and date between years 1992 and 2007 on the TV screen using the Remote Commander.

Before you begin

- Use ▲ or ▼ to move the cursor (▶).
- Use ◀ or ▶ to select the items.
- The day of the week is automatically set after the date is set.
- To quit setting in the middle of the procedures, press MENU.

Example of Time and Date Setting

Example: Set to 9:30 AM, July 4, 1992

1 Press MENU.
The main MENU appears.

2 Press ▲ or ▼ to move the cursor (▶) to CLOCK SET.

3 Press EXECUTE.
"1/1/1992 WED 12:00 AM" is displayed.
The leftmost 1, in the "month" position, flashes.

4 Press ▲ or ▼ until 7 appears in the month position.

5 Press ▶ to make the next number blink in the "day" position.

6 Press ▲ or ▼ until 4 appears in the day position.
The day of the week is set automatically.

7 Press ▶ to make the year flash and press ▲ to change the year.

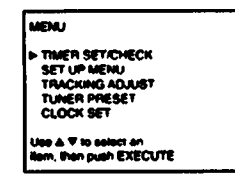
8 Press ▶ to make the time flash.

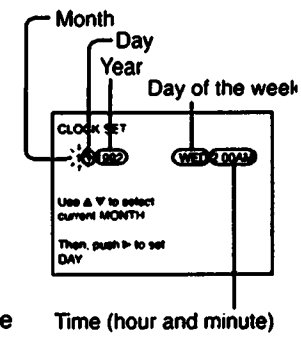
9 Press ▲ or ▼ until 9 AM appears.

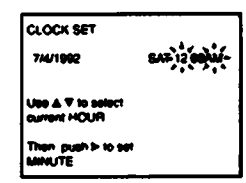
10 Press ▶ to make the minute flash.

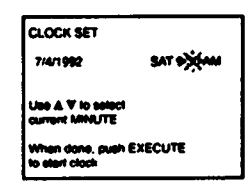
11 Press ▲ or ▼ until 30 appears in the minute position.

12 Press EXECUTE at the same time that you hear the time signal.
Pressing EXECUTE will set the clock to 9:30 AM 00 seconds.









If "– : – –" lights up in the display window of the VCR

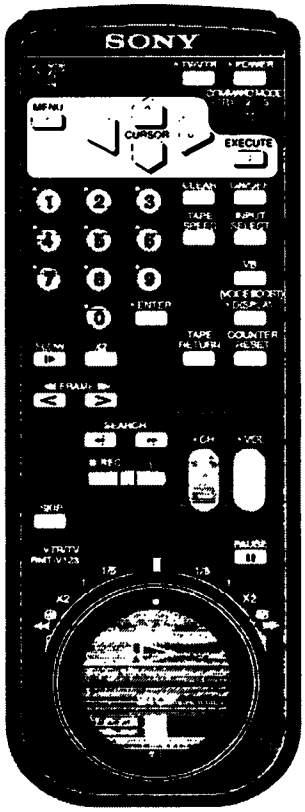
If the power is interrupted for more than one hour, "– : – –" lights up in the display when the power is restored. You will have to reset the date and clock again.

When the time and date clock is displayed

The clock keeps running as long as no changes are made. The seconds are not reset to 00 when you return to the original screen.

You cannot set the time and date during timer-activated recording, timer recording standby, quick-timer recording.

Presetting the Active Channels



This VCR is capable of receiving VHF channels 2 to 13, UHF channels 14 to 69 and CATV channels 1 to 125. These channels can be preset using the Remote Commander and the TUNER PRESET display. First, we recommend that you preset the active channels in your area using the automatic preset mode. Then, if there are any unwanted channels, disable them manually. If you have already decided which channels you want to preset on the VCR, set them manually using the channel number buttons. (See page 26.)

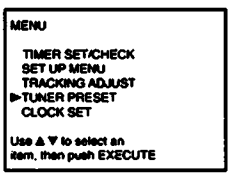
Before you begin

Before presetting channels, check the following points:

- Turn on the VCR and the TV.
- If you have connected the TV and the VCR using the VHF/UHF OUT on the VCR only, make sure that the TV is set to the correct channel (Ch 3 or Ch 4) for the VCR.
- Press TV/VTR to display the VTR indicator in the display window of the VCR.
- Press INPUT SELECT so that the TUNER indicator and the channel number appear in the display window of the VCR.
- Use ▲ or ▼ to move the cursor (▶).
- Use ◀ or ▶ to select the items.
- To quit setting in the middle of the procedure, press MENU.

Presetting All Receivable Channels Automatically

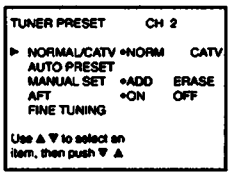
1 Press MENU.
The main MENU appears.



2 Press ▲ or ▼ to move the cursor (▶) to TUNER PRESET.

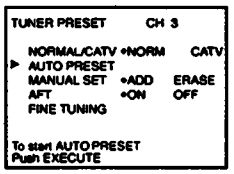
3 Press EXECUTE.
The TUNER PRESET menu is displayed.

4 Press ▲ or ▼ to move the cursor to NORMAL/CATV.


TUNER PRESET CH 2
▶ NORMAL/CATV •NORM CATV
AUTO PRESET
MANUAL SET •ADD ERASE
AFT •ON OFF
FINE TUNING
Use ▲▼ to select an item, then push ▼ ▲

5 Press ◀ or ▶ to select NORM or CATV.
NORM presets the VHF and UHF channels; CATV presets your cable TV channels. The lowest channel number, 2 for NORM and 1 for CATV, will appear on the screen.

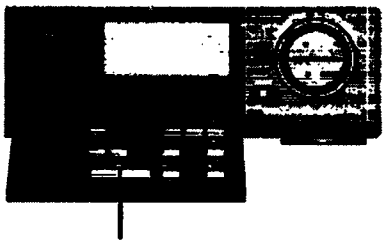
6 Press ▲ or ▼ to move the cursor to AUTO PRESET.



7 Press EXECUTE.

Receivable channels begin presetting in numerical sequence.

When no more channels can be found, the presetting stops and the picture of the lowest numbered channel is displayed on the TV screen.



CHANNEL +/-

Presetting Desired Channels or Disabling Unwanted Channels

After automatic presetting is completed, you can disable and/or add channels manually.

1 Follow steps 1 through 3 in "Presetting All Receivable Channels Automatically" on page 25.

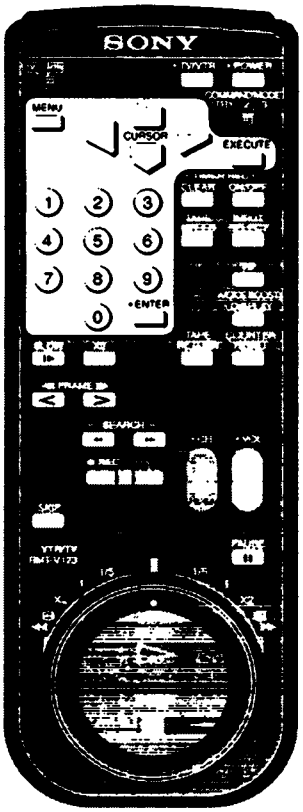
2 Press CHANNEL +/– on the VCR, or press channel number buttons (0 through 9) on the Remote Commander and ENTER to select the channel.
Once a channel was erased, it is skipped with CHANNEL +/–. So, if you want to select the number that was erased, use channel number buttons (0 through 9) and ENTER to select the channel.

3 Press ▲ or ▼ to move the cursor to MANUAL SET.

4 To disable channels, press ◀ or ▶ to select ERASE.
To add channels, press ◀ or ▶ to select ADD.

5 Press EXECUTE.

When you press CHANNEL +/–, the disabled channels are removed and the added channels are displayed.



Fine Tuning

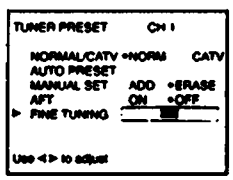
Normally, the Auto Fine Tuning (AFT) setting on the TUNER PRESET menu is set to ON, and the AFT function automatically fine-tunes the picture. If you change the channel and the picture is not acceptable, fine-tune it manually.

1 Follow to steps 1 through 3 in "Presetting All Receivable Channels Automatically" on page 25.

2 Press ▲ or ▼ to move the cursor to FINE TUNING.
The fine tuning indicator is displayed.

3 Press ◀ or ▶ to get a clearer picture.
The AFT automatically switches to OFF.

4 If you cannot get a better picture, press ▲ to move the cursor to AFT and reselect ON. Then, press EXECUTE.



The FINE TUNING indicator

The FINE TUNING indicator shows the operable fine-tuning range and stops at the optimal point of reception. When the VCR's tuner is receiving an optimal broadcast signal, the indicator stops at the center position or one space right or left of the center position. However, even when a broadcast is received in an optimal condition, the indicator may not be at the position described.

Cable TV Channel Assignment

Cable TV systems use letters or numerals to designate channels. To tune-in a CATV channel, refer to the chart below which shows the CATV channel, numbers on this VCR and the corresponding CATV channel. Note that the channel number assignment shown in the chart may not correspond to the channel number used by your local cable company. Check with your local cable TV company for more information on the available channels.

Number on this VCR	1	2	...	13	14	15	16	17	18
Corresponding CATV channel	A-8	2	...	13	A	B	C	D	E

19	20	21	22	23	24	25	26	27	28	29	30	31
F	G	H	I	J	K	L	M	N	O	P	Q	R

32	33	34	35	36	37	...	94	95	96	97	98	99
S	T	U	V	W	W_{+1}	...	W_{+58}	A-5	A-4	A-3	A-2	A-1

100	...	125
W_{+59}	...	W_{+84}

This VCR is designed to correspond to the standard cable system. However, cable TV services may vary from area to area. Your local cable TV company may have adopted either the HRC*1 or IRC*2 cable system. Still, this VCR can receive either of these two cable systems in the best condition.

HRC*1 (Harmonic Related Carriers)

All channels except for 5 and 6 are 1250 kHz lower than the standard cable system. Channels 5 and 6 are 750 kHz higher than the standard cable system.

IRC*2 (Incremental Related Carriers)

All channels except for 5 and 6 are the same as the standard cable system. Channels 5 and 6 are 2000 kHz higher than the standard cable system.

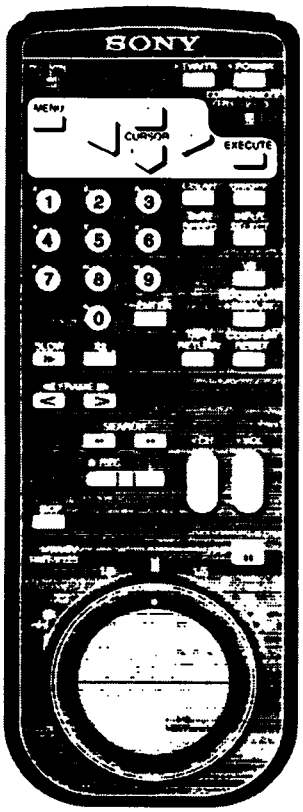
Notes on pay cable TV systems

Pay cable TV systems use scrambled or encoded signals and require special converters (decoders) in addition to the normal cable connection.

FINE TUNING indicator for receiving HRC or IRC cable systems

Even when signals are received in optimal condition, the FINE TUNING indicator will not stay at the center position for channels higher or lower than the standard cable system due to the difference in the frequencies.

Using the SET UP MENU

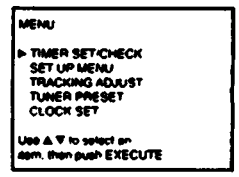


Before using the VCR, set your preferences in the SET UP MENU display .

Before you begin

- Use ▲ or ▼ to move the cursor (▶).
- Use ◀ or ▶ to select the items.
- To quit settings in the middle of the procedure, press MENU.

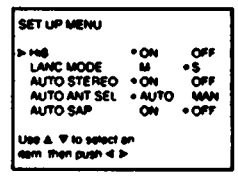
1 Press MENU.
The main MENU appears.



2 Press ▲ or ▼ to move the cursor (▶) to SET UP MENU.

3 Press EXECUTE.
The SET UP MENU appears.

4 Press ▲ or ▼ to move the cursor (▶) to the desired menu choice you want. (See "Menu Choices" below.) Next, press ◀ or ▶ to move the dot (•) to select the desired mode setting.



5 Press EXECUTE to return to the original screen.
The settings will remain unless the power plug is disconnected.

Menu Choices

Hi8

You can record a cassette in either Hi8 video system or 8mm standard video system.
You cannot perform Hi8 recording with a cassette other than a Hi8 video tape. (See "Hi8 (High Eight) Video System on page 62.)
When the Hi8 indicator lights up on the front panel of the VCR, you can record in the Hi8 video system.

ON ---The VCR automatically detects the type of the cassette to be used (Hi8 video tape or standard video tape) and recording is done accordingly (in the Hi8 video system or 8mm standard video system).

OFF ---When you intend to play back the Hi8 cassette on a standard 8mm video recorder.

LANC MODE

If you want to control another VCR with the SYNCHRO EDIT button, set to M. Set to S in any other case. (For details, see page 60.)

AUTO STEREO

If a stereo program's reception is poor, set to OFF. The program is recorded in monaural but the sound quality may improve. (For details, see page 35.)

AUTO ANT SEL (Automatic Antenna Selector)

- If your TV is connected only to VHF/UHF OUT on the VCR inputs, set to AUTO.

  When playing back a cassette, the picture is automatically displayed on the screen simply by selecting the channel for the VCR on the TV. To watch TV programs selected on the TV, press TV/VTR to turn off the VTR indicator in the display window.

- If your TV is connected to both VHF/UHF OUT and LINE OUT 1 or 2 on the VCR, set to MAN.

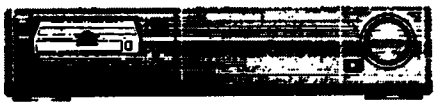
  When playing back a cassette, select the input for the VCR on the TV.
  To watch TV programs selected on the TV, select the tuner input.

AUTO SAP (Second Audio Program)

When you want to record a SAP sound, select ON. Every time there is a SAP broadcast, SAP sound is recorded.

When you do not want to record a SAP sound during receiving a SAP broadcast, select OFF. (For details, see page 35.)

Playback



This section shows you how to perform the basic playback, handle the video tape, use the display etc.

Inserting a Video Cassette

Caution

Be careful not to allow children to stick their fingers into the cassette loading slot. This may cause injury.

1 Insert a video cassette.

2 Gently press the center of the front side of the cassette until the mechanism draws it into the compartment.
When the cassette has been loaded, the cassette lamp ⊡ lights on the front of the VCR and the VCR turns on automatically.

Ejecting the Cassette

Press ≜ EJECT on the VCR. You can eject the cassette when the power is off. When you press ≜ EJECT, the power is turned on. After ejecting the cassette, the power automatically shuts off.
You cannot eject a cassette during recording, recording pause mode or timer standby mode.

Handling the Cassette

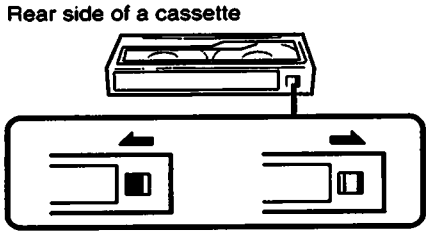
Notes

- Always insert the cassette in the correct position.
- Never insert anything in the small holes on the rear of the cassette.
- Store cassettes in their cases and keep them in an upright position to prevent intrusion of dust and uneven winding.
- To record from the beginning of the tape, play the tape for about 15 seconds at the beginning of a cassette before recording.
- When the VCR is not in use, remove the cassette.
- Attach the cassette label in the designated area.
- Attach the label so that it does not peel off.

Maximum recording time of a cassette

Cassette used	Recording/playback time	
	SP mode	LP mode
E6/P6-30	30min	1h
E6/P6-60	1h	2h
P6-90	1h 30min	3h
E6/P6-120	2h	4h
P6-150	2h 30min	5h

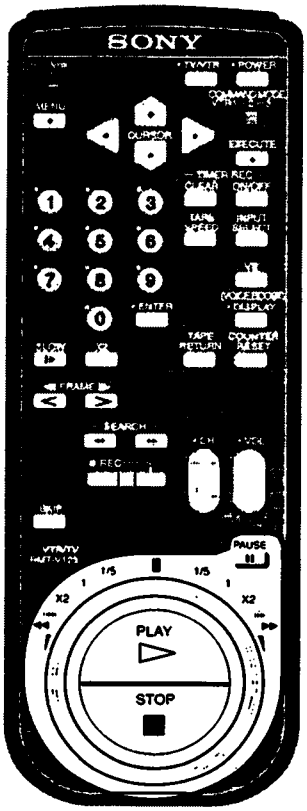
Rear side of a cassette



Protecting your cassette against accidental erasure
To prevent accidental erasure, slide out the tab on the cassette so that the red color is visible.

To re-record on the cassette, slide the tab back.

Playing Back a Cassette



The VCR automatically detects the type of video system in which the tape was recorded (Hi8 or standard video system, for details see page 28) and plays back the tape accordingly. When a tape recorded in the Hi8 video system is played back, the Hi8 lamp on the front of the VCR lights up.

1 Insert a cassette.
The VCR turns on automatically.

2 Turn on the TV.
If your TV is connected to both the VHF/UHF OUT and LINE OUT 1 or 2 on the VCR, select the input for the VCR.
If your TV is connected only to the VHF/UHF OUT on the VCR, select the channel for the VCR (Ch 3 or Ch 4).

3 Press ▷ PLAY.

To stop playback
Press ■ STOP.

To stop playback for a moment.
Press II PAUSE.
Press II PAUSE again or press ▷ PLAY to resume playback.

To advance the tape rapidly
Press ■ STOP, then turn the DUAL MODE SHUTTLE ring clockwise.

To rewind the tape.
Press ■ STOP, then turn the DUAL MODE SHUTTLE ring counterclockwise.

To view the picture during fast forward mode or rewind mode
You can view the picture momentarily while the VCR is in the fast forward or rewind mode. Turn the DUAL MODE SHUTTLE ring clockwise during fast-forward, and counterclockwise during rewind.

To start playback automatically after rewinding a cassette (Auto play)
This operation works only on the VCR. Press ▷ PLAY while you turn the DUAL MODE SHUTTLE ring counterclockwise fully.
Playback starts automatically after the tape is rewound to the beginning of the tape.
The "▷" indication flashes while the tape is being rewound.

To eject the cassette
Press ⏏ EJECT on the VCR.

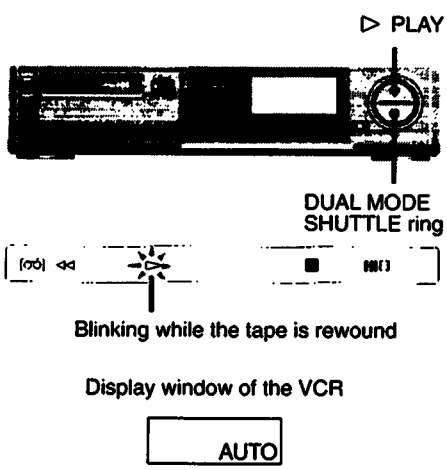
Pressing ⏏ EJECT when the VCR is turned off will turn the unit on, eject the cassette and then turn it off again.

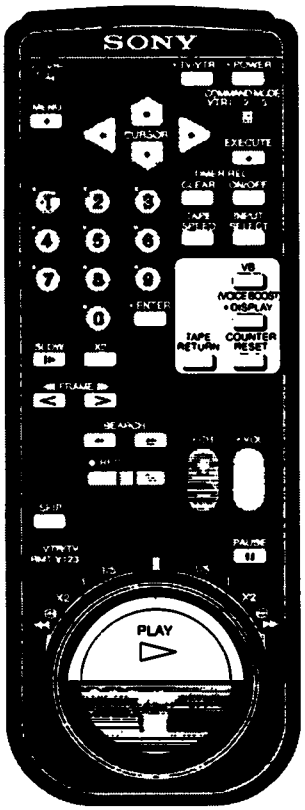
When the tape reaches the end during playback
The VCR automatically rewinds the tape to the beginning and the power stays on.

To turn the VCR on or off
Press POWER.

Never unplug the power cord during tape transportation

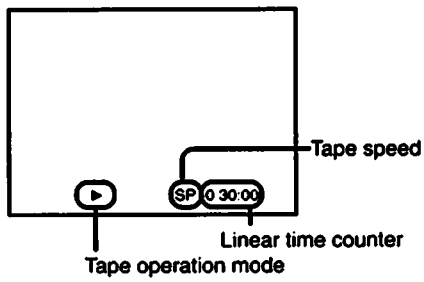
This may cause the tape to be jammed in the VCR. When you need to unplug the power cord, be sure to remove the cassette or turn off the power of the VCR.





Information on the Screen

To turn off or call up the information on the TV screen, press DISPLAY on the Remote Commander.



When the information does not appear on the TV screen
Check to see that the LINE OUT 1 or 2 jacks are connected to the line input jacks of the TV. If you connect your TV to the LINE OUT jacks, the data screen won't appear.

Indexing Tape Contents

Before recording or playback, press COUNTER RESET to reset the counter to zero. The counter installed in the VCR is called a "linear time counter", which tells you how much the tape has run in terms of time. By noting the setting, you can find that point later by referring to the counter. Use the label on a cassette to list the programs and their counter readings.

Notes on counter reading

- The counter does not work on the video tape portions on which no recording has been made.
- After a cassette is ejected, the counter reading is retained. When a cassette is inserted in the VCR, the counter reading automatically returns to "0H00M00S".
- The linear time counter installed in this VCR is not a clock. There is a difference between the actual recording and playback time, and the counter display. This difference may increase when switching the tape speed from SP to LP and vice versa, or depending on the portion of the transported tape.

Locating a Particular Scene Later

If you want to return to a particular scene later, press COUNTER RESET at the desired scene so that the linear time counter is set to "0H00M00S".

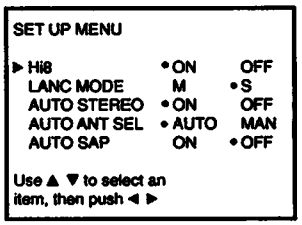
To return to the desired scene
Press TAPE RETURN on the Remote Commander while the VCR is in stop mode. The tape rewinds to the position where the counter reads "0H00M00S", and stops.
To start playback of the scene
Press ▷ PLAY.

Listening More Easily to Conversation Recorded with a Camcorder

When you press VB (VOICE BOOST) while playing back a tape recorded with a camcorder, human voice portion of the sound will be enhanced so that it is easier to listen to conversation. This reduces the sound of wind and other "unwanted" background noise.

Recording

You can record in the Hi8 video system or the standard 8mm video system. The VCR detects the type of video tape (Hi8 or standard 8mm) on which you want to record, and records accordingly.
Normally you should set the Hi8 setting to ON in the SET UP MENU. However, if you intend to play back on another standard 8mm video recorder, set the Hi8 setting to OFF in the SET UP MENU (for details, see "Using the SET UP MENU" on page 28.



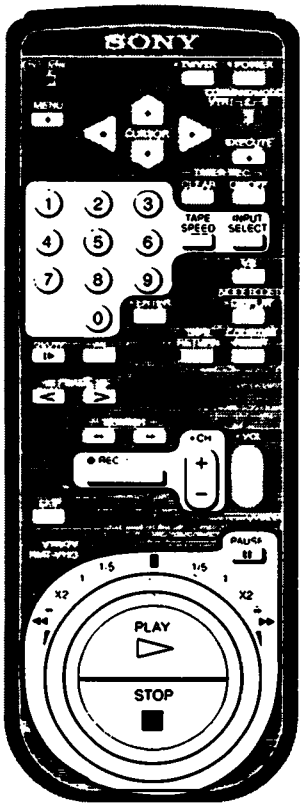
Type of video tape and video system in which a tape will be recorded

Video tape used	Hi8 setting in the SET UP MENU	Video system tape will be recorded in
Hi8 video tape	ON	Hi8 video system
	OFF	Standard 8mm system
Standard 8mm video tape	ON	Standard 8mm system
	OFF	Standard 8mm system

Before you begin

Before you begin, check the following points:

- Make sure that the connections have been made correctly (see pages 11–18).
- Check the input mode indicator in the display window of the VCR.



Recording TV Programs

1 Insert a cassette.
The VCR turns on automatically (Auto power on).

2 Turn on the TV.

3 If your TV is connected to both the VHF/UHF OUT and LINE OUT 1 or 2 on the VCR, select the input for the VCR.
If your TV is connected only to the VHF/UHF OUT on the VCR, select the channel for the VCR (Ch 3 or Ch 4).

4 If your TV is connected only to VHF/UHF OUT, then press TV/VTR so that the VTR indicator lights up. Skip this step if your VCR is connected to both VHF/UHF and LINE OUT 1 or 2.

5 Press INPUT SELECT to light the channel number in the display window of the VCR. Select the channel to be recorded with CHANNEL +/– or the channel number buttons.

6 Select SP or LP using TAPE SPEED.
To select the best recording tape speed, see "Maximum recording time of a cassette" on page 30.

7 Press the two ● REC buttons on the Remote Commander at the same time, or the ● REC button on the VCR.
The REC (recording) lamp lights up on the front of the VCR.

To stop recording
Press ■ STOP.

To pause recording
Press ❚❚ PAUSE. To resume recording, press ❚❚ PAUSE. If the recording pause exceeds approximately 7 minutes, the VCR stops.

Pausing

Technique 1
You can stop recording an unwanted scene and resume recording smoothly.

1 Press ❚❚ PAUSE when an unwanted scene appears.
Recording will stop and the VCR enters recording pause mode.

2 Press ❚❚ PAUSE at the desired point to release pause mode.
Recording resumes from the point set in step 1.

Technique 2
When an unwanted scene has already started recording, you can rewind the cassette to the desired point, have the VCR standby in recording pause mode, and resume recording at the desired scene.

1 Press ❚❚ PAUSE to set the VCR to recording pause mode.

2 Turn the DUAL MODE SHUTTLE ring on the VCR counterclockwise to search for the point from which you wish to continue recording.

3 Release the DUAL MODE SHUTTLE ring on the VCR at the desired point.
After an instant in still mode, the VCR automatically enters recording pause mode.

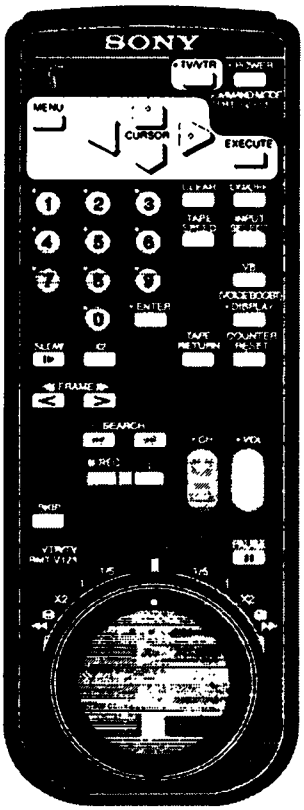
4 Press ❚❚ PAUSE.
Recording resumes.

When the cassette reaches the end

The cassette rewinds to the beginning and the power stays on.

If the tape is ejected when the ● REC button you press

The tab on the cassette is slid out. Slide the tab in or use a new cassette.



Recording with the TV Off

Turn off the power to the TV or monitor.
There will be no interference with the recording.

Watching One TV Program While Recording Another

1 Press TV/VTR so that the VTR indicator goes off.

2 Select the channel you want to watch on the TV.

When the VTR indicator is	Channel seen on the TV screen is
Lit	Channel selected by the VCR or the playback picture of the VCR
Unlit	Channel selected by the TV

Recording Multi-Channel TV Sound Broadcasts

To record a stereo broadcast:

When a stereo broadcast program is received, the STEREO indicator appears in the display window of the VCR. The stereo program is automatically recorded in stereo. If the reception of the stereo program is poor, set AUTO STEREO to OFF in the SET UP MENU. (See page 28.) The sound is heard in monaural but the noise is reduced.

To record a SAP (Second Audio Program) broadcast:

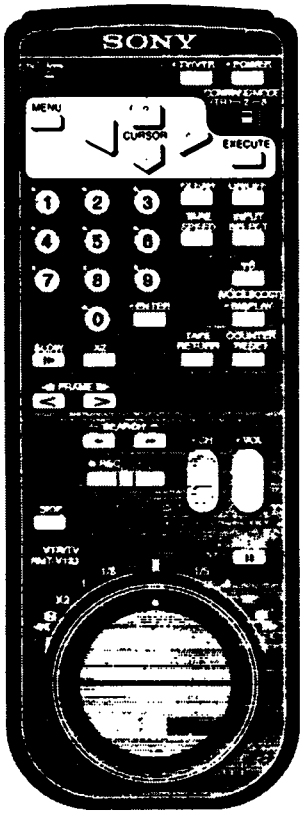
Normally, set AUTO SAP to OFF in the SET UP MENU. SAP sound is recorded in monaural if there is a SAP broadcast. When the VCR receives an SAP broadcast, the SAP indicator lights up in the display window of the VCR.

If you do not want to record SAP sound while receiving a SAP broadcast, select OFF at the AUTO SAP setting in the SET UP MENU. Only the main sound is recorded.

Note on stereo broadcasts

When the TV is connected only to the VHF/UHF OUT on the VCR, you cannot hear the program in stereo.

Timer-Activated Recording



The timer recording function lets you preset your VCR to record up to six programs within a one-month period. Perform this procedure using the Remote Commander and set each item on the TIMER SET/CHECK display.

Before you begin

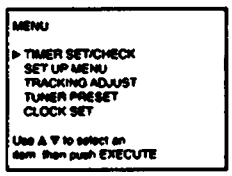
- Make sure that the time and date are set correctly (see "Setting the Time and Date" on page 24.)
- Make sure that the video tape is long enough to record all the programs.
- Make sure that the safety tab of the cassette has not been slid out. If you insert a cassette with the red safety tab visible (closed) and try to set the timer, the cassette automatically ejects from the VCR.
- Use ▲ or ▼ to move the cursor (▶).
- Use ◀ or ▶ to select items.
- To quit setting in the middle of the procedures, press MENU.

Setting the Timer

Example:

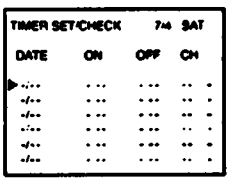
Record a program broadcast on channel 26 from 9:00 pm to 10:55 pm on Friday, July 10 in LP mode.

1 Press MENU.
The main MENU appears.

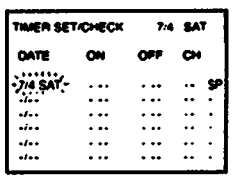


2 Press ▲ or ▼ to move the cursor (▶) to TIMER SET/CHECK.

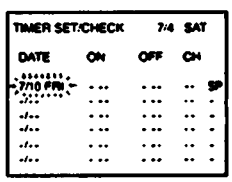
3 Press EXECUTE.
The TIMER SET/CHECK display appears on the screen. If the clock is not set properly, reset the clock, referring to "Setting the Time and Date" on page 24.



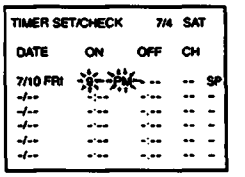
4 Press ▶.
The current date appears blinking under "DATE."



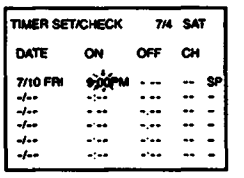
5 Press ▲ to set the month and date to 7/10/FRI.
The day of the week is automatically set.



6 Press ▶ to blink the hours section under "ON" then ▲ or ▼ until 9PM appears.

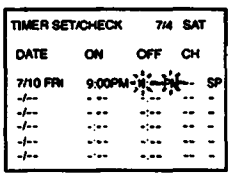


7 Press ▶ to blink the minutes section under "ON", then ▲ or ▼ until 00 appears.

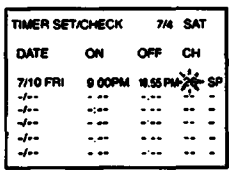


8 Press ▶.
The cursor blinks in the time field under "OFF" column.
Set the time to finish recording, referring to steps 6 and 7.

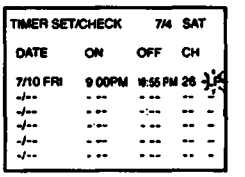
9 Press ▶ to blink the "CH" field, then press ▲ or ▼ until 26 appears.
Only the channels you have preset in the VCR will appear. You can also use the CHANNEL +/– or channel numbers buttons.



10 Press ▶ to make the recording position blink, then TAPE SPEED, ▲ or ▼ until LP appears.
To change or correct a setting before entering it, press ◀ to return to the item you want to change.

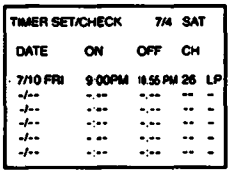


11 Press ▶ to store the setting.
When all of the settings stop blinking and display a ▶ in the leftmost column, you've completed the setting.
To preset another program, move the cursor to the next line and repeat steps 4 to 11.



12 Press EXECUTE.
The message "Please push TIMER REC to set timer" appears on the TV screen.

13 Press TIMER REC ON/OFF.
The VCR enters timer recording standby mode and the TIMER REC lamp on the front of the VCR lights up.



To record video sources from LINE IN 1 or 2 jacks

Press INPUT SELECT in step 9 to move the cursor to LINE in the "CH" field. This cursor returns to the channel number on the second press.

Daily/Weekly Recording

You can preset your VCR for daily or weekly recording.

Daily recording records the same program every day of the week while weekly recording records the same program on the same day, every week.
Each time you press ▼, the indicator under the "DATE" column changes to one of the following choices:

SUN-SAT (Every day of the week)
↓
MON-SAT (Every day except Sunday)
↓
MON-FRI (Every day except Saturday and Sunday)
↓
EVERY SAT
⋮
↓
EVERY TUE
↓
EVERY MON
↓
EVERY SUN

If a power interruption occurs during timer recording, recording will stop and your VCR will turn off. If power is restored within one hour, and it's before the recording end time, recording will start again from that point. If the interruption lasts for more than one hour, any presettings will be erased and you'll need to reset the time and date for your programs. Note that the tape counter will return to "0H00M00S".

When the tape reaches the end during timer recording
The tape is not rewound automatically. If the tape runs out before the recording is completed, recording stops and the power is turned off.

When the recording of the preset program has finished
The program contents of the timer recording will be erased except for daily and weekly recording, and the program orders in the TIMER SET/ CHECK list display will be moved up.

The Timer Recording Standby Mode

When you return the VCR to the timer recording standby mode, you can record any previously preset programs. The VCR turns on automatically to record the first preset program. When it finishes recording, the power automatically shuts off.
To stop recording while a program is being recorded, press TIMER REC ON/OFF.

Buttons Operable During Timer Recording

TIMER REC ON/OFF		To stop recording.
COUNTER RESET		(See "Indexing Tape Contents", page 32.)
TV/VTR		(See "Watching One TV Program While Recording Another", page 35.)
DISPLAY		(See "Information on the Screen", page 32.)
MENU	TIMER SET CHECK	(See "Changing or Cancelling the Timer Settings", page 41.)

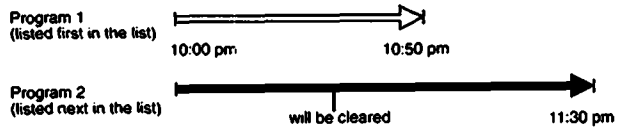
Overlapping Timer Recordings

In cases in which you have made a "mistake" when presetting multiple programs, the VCR will interpret your settings as described in the following cases.

Case 1

If you preset two programs to record at the same time...

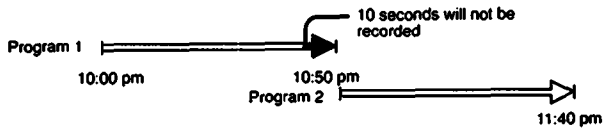
The program listed first on the TIMER SET/CHECK list display has priority over the other programs. The timer settings for lower priority programs will be deleted from the PROGRAM LIST display when recording begins for the first program.



Case 2

If you set program 2 to record at the same time you set program 1 to finish recording....

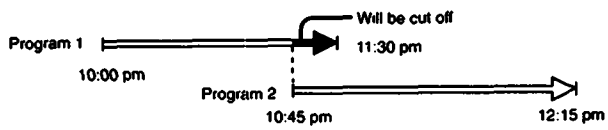
The last 10 seconds of program 1 will not be recorded.

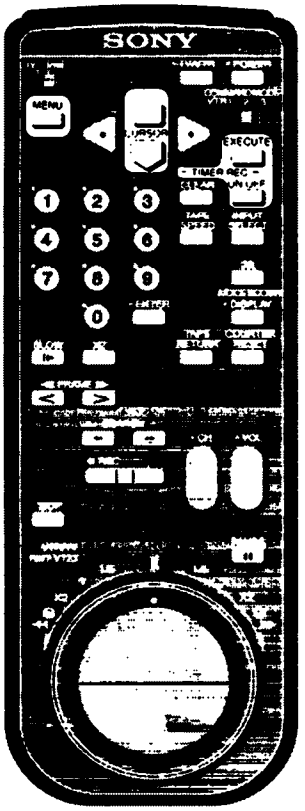


Case 3

If you set program 2 to record before program 1 has finished recording...

Program 2 will begin recording before program 1 has finished.





Checking the Timer Settings

Before you begin

- Use ▲ or ▼ to move the cursor (▶).
- Use ◀ or ▶ to select items.

Here's how to display your timer settings to confirm the programs you want to record.

1 Press TIMER REC ON/OFF to release timer recording standby mode.
The TIMER REC (recording) lamp turns off on the front of the VCR.

2 Turn on the TV.

3 Press POWER to turn on the VCR.

4 Press MENU.
The main MENU appears.

5 Press ▲ or ▼ to move the cursor (▶) to TIMER SET/CHECK.

6 Press EXECUTE.
The TIMER SET/CHECK display appears.

7 Press EXECUTE to return to the original screen.

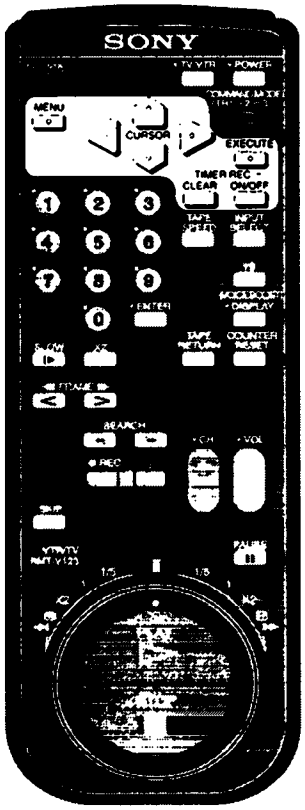
8 Press TIMER REC ON/OFF to return to timer recording standby mode.
The TIMER REC (recording) lamp on the front of the VCR turns on.

TIMER SET/CHECK 7/4 SAT

DATE	ON	OFF	CH	
EVERY SAT	10:30PM	11:58PM	08	SP
7/13 MON	9:55AM	10:00AM	6	SP
SUN -SAT	7:15AM	7:30AM	12	LP
MON -SAT	6:30AM	6:45AM	11	LP
MON -FRI	1:30PM	1:40PM	15	LP
7/10 -FRI	10:58PM	11:00PM	26	LP

Notes on TIMER SET/CHECK display

- If you set a program to record only one time, that setting is erased from the TIMER SET/CHECK display when the recording has finished.
- To check the timer settings during timer recording, follow steps 3 to 6.



Changing or Cancelling the Timer Settings

Here's how to change or cancel any timer settings on the TIMER SET/CHECK display.

1 Display the TIMER SET/CHECK display on the TV screen by following the procedures in "Checking the Timer Settings" on page 40.

2 Press ▲ or ▼ to move the cursor (▶) to the program you want to change or cancel.

3 To change a program, select the item to be changed by pressing ◀ or ▶, then make changes by pressing ▲ or ▼.
To cancel it, press TIMER REC CLEAR.
Repeat this step to change or cancel other settings.

4 Press EXECUTE to store the changes and return to the original screen.

5 Press TIMER REC ON/OFF to put the VCR in timer recording standby mode.

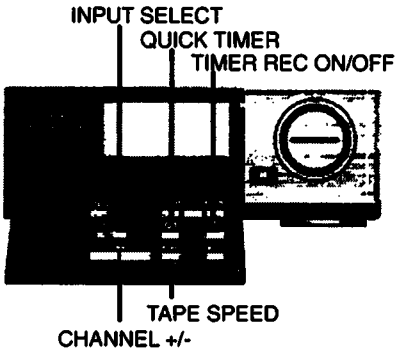
Using the VCR Before Timer Recording Starts

If you want to use your VCR while it's in timer recording standby mode, you must first turn off the TIMER REC (recording) lamp on the front of the VCR.

1 Press TIMER REC ON/OFF.
The TIMER REC (recording) lamp on the front of the VCR turns off and the VCR leaves the timer recording standby mode.

2 Press POWER.
The VCR is ready to use.

3 After using the VCR, press TIMER REC ON/OFF.
The VCR returns to the timer recording standby mode.



Quick-Timer Recording

This function is convenient for recording programs without going through the entire timer setting procedure. Note, however, that it provides only an approximate setting for the program you want to record.

Before you begin

- Make sure that the clock has been set correctly.
- Make sure the TIMER REC lamp is not lit on the front of the VCR.

Operation

If you're currently recording, skip to step 7.

1 Insert a cassette into your VCR.

2 Press INPUT SELECT to select the recording source from the tuner input or line input. If you selected the tuner input, the channel number lights in the display window of the VCR. If you selected the line input, the LINE indicator lights in the display window of the VCR.

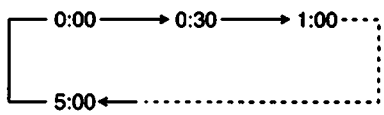
3 Select the desired recording speed (SP or LP) using TAPE SPEED.

4 Press QUICK TIMER on the VCR.
If you insert a cassette with the safety tab slid out, your VCR will eject the cassette.

5 Select the channel you want to record using CHANNEL +/– if you select the tuner input.
The channel can be changed while the channel indicator is flashing (for about 30 seconds).

6 Press QUICK TIMER again to start recording.

7 The recording time increases by 30 minutes (up to 5 hours) each time you press QUICK TIMER. (During recording, the time displayed will count down to zero.)



Once the VCR has finished, it will turn off automatically.
During quick-timer recording, the recording time can be changed by pressing the QUICK TIMER.

To stop quick-timer recording

Press TIMER REC (ON/OFF).

If your cassette ends during quick-timer recording

Recording stops and the VCR turns off. The cassette will not rewind automatically.

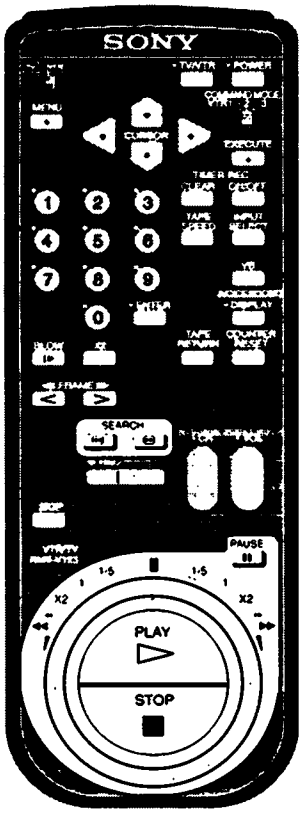
If a power interruption occurs during quick-timer recording

Recording will stop and your VCR will turn off. If the interruption lasts less than one hour and the power is restored before the recording end time, recording will start again from that point.

Buttons Operable During Quick-Timer Recording

TIMER REC ON/OFF	To stop quick-timer recording.
QUICK TIMER	To change recording duration.
COUNTER RESET	To reset the counter to zero.
TV/VTR	To watch a TV broadcast on another channel.
MENU	To check the program list. (See "Checking the Timer Settings", page 40.)

Variable Speed Playback



The following section explains the advanced playback functions available on your VCR. No sound is heard during these operations.

Using the DUAL MODE SHUTTLE ring, you can play a cassette at a variety of forward and reverse speeds. You can also freeze a picture using the pause function.

Still Picture

During playback, press ⏸ PAUSE to hold the picture in one place.

To resume normal playback, press either ▷ PLAY or ⏸ PAUSE.

If you leave your VCR in pause mode, normal playback resumes after approximately 7 minutes.

Picture Search During Playback

Turn the DUAL MODE SHUTTLE ring clockwise or counterclockwise.
When you release your fingers from the ring, normal playback will resume.

Locked Picture Search

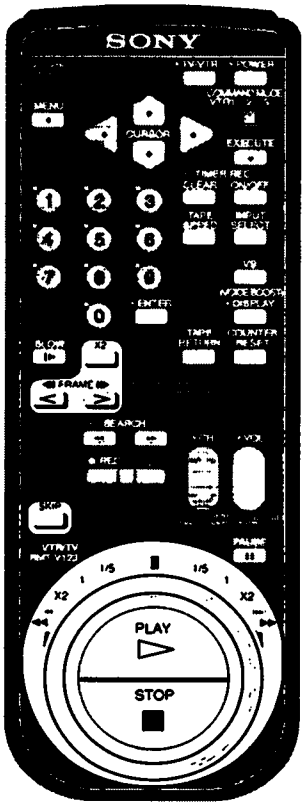
This operation works only on the Remote Commander.

Press SEARCH on the Remote Commander during playback or playback pause. I you press the left SEARCH, the VCR enters locked picture search mode in the reverse direction. If you press the right SEARCH, the VCR enters locked picture search mode in the forward direction.

To return to normal playback
Press ▷ PLAY.

Notes:

- When viewing the picture in variable speed playback mode, the picture may shake vertically or the color may become black and white, depending upon the TV you are using.
- During picture search mode, several streaks appear on the TV screen. This is normal. A wider streak will appear on the TV screen during picture search mode as compared to tapes recorded in LP mode.
- If you perform picture search with the VCR connected to your TV via RF OUT, a sound such as a buzzing sound may slightly be heard.
- When you perform variable speed playback in the reverse direction, a wider streak appears on the screen, especially in SP mode. This is normal.



x2, –x2 Speed Playback

Using the DUAL MODE SHUTTLE ring:
Slowly turn the DUAL MODE SHUTTLE ring clockwise (in the forward direction) or counterclockwise (in the reverse direction) until the x2 (forward double-speed playback) or –x2 (reverse double-speed playback) indicator appears on the TV screen.

To return to normal playback
Release your fingers from the ring.

Using the x2 button on the Remote Commander:
Press x2.

To play back in the reverse direction
Press < FRAME.

To resume the forward direction
Press FRAME >.

To return to normal playback
Press ▷ PLAY.

–x1 Playback

Using the DUAL MODE SHUTTLE ring:
Gently turn the DUAL MODE SHUTTLE ring counterclockwise until the VCR enters reverse slow motion playback mode. After a slow motion picture appears on the TV screen, you can view a –x1 playback picture. Hold the DUAL MODE SHUTTLE ring at that point.

Using the Remote Commander:
Press ▷ PLAY, then < FRAME.

Skip Search

This operation works only on the Remote Commander.
Press SKIP during playback, and the unit skips thirty seconds of a scene.
If you press SKIP two times or more, the unit skips one minute of a scene.

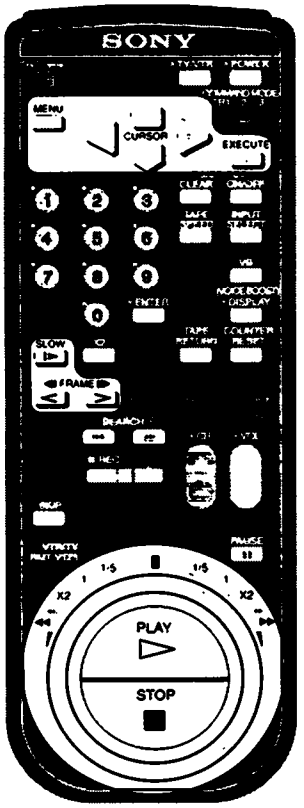
Frame-by-Frame Picture

This operation works only on the Remote Commander.
During playback pause, press FRAME > to advance the picture one frame or < FRAME to reverse the picture one frame.

Each time you press the button, the picture moves one frame. To resume normal playback, press ▷ PLAY.

Notes:

- It takes about two or three seconds to reverse the direction in slow motion mode or frame-by-frame mode.
- When the tape speed is switched, noise appears a moment.
- If a tape has portions recorded in both SP and LP modes, the VCR will automatically adjust; however, the playback speed during reverse/forward slow motion playback, and x2 playback is not changed even though the tape speed is actually switched SP to LP or LP to SP.



Slow Motion Playback

Using the DUAL MODE SHUTTLE ring:
Slowly turn the DUAL MODE SHUTTLE ring clockwise (in the forward direction) or counterclockwise (in the reverse direction) until the SLOW (forward slow motion playback) or –SLOW (reverse slow motion playback) indicator appears on the TV screen.

To return to normal playback
Release your fingers from the ring.

Using the Remote Commander:
Press ▮► SLOW .

To play back in reverse direction
Press < .

To resume the forward direction
Press > .

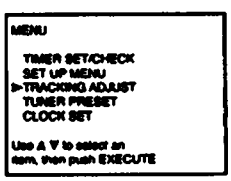
To return to normal playback
Press ▷ PLAY.

If you leave the VCR in slow motion mode for about 30 seconds, the VCR will automatically return to normal playback to protect the tape against damage.

Adjusting Tracking During Variable Speed Playback

This adjustment works during only slow motion playback and x2 speed playback.

1 Press MENU.
The main MENU appears.



2 Press ▲ or ▼ to move the cursor to TRACKING ADJUST.

3 Press EXECUTE.
The TRACKING ADJUST menu appears.

4 Press ▲ or ▼ to move the cursor (▶) to the item you want.

5 Press ◀ or ▶ to move the ■ mark on the tracking bar so that you will obtain the best possible picture on the screen.

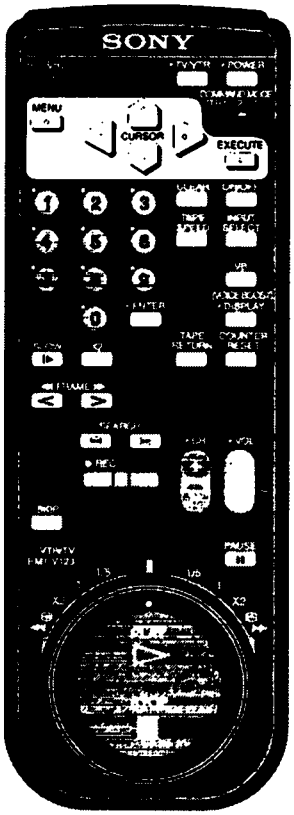
6 Press EXECUTE.
The TRACKING ADJUST menu disappears.

Shift this until you obtain the best possible picture

Tracking bar

Notes on tracking adjustment

- While playing back in slow motion, the tracking adjustment may not clear all the noise from the picture. It doesn't mulfunctin.
- If the tracking bar is shifted too much, noise in the picture becomes too unstable to adjust. In this case, reset the tracking to the center position.
- If the VCR is in stop mode, the tracking bar will not appear on the TV screen. Since you cannot adjust tracking, put the VCR in slow motion playback mode or x2 speed playback mode to adjust tracking.
- It is necessary to adjust tracking for both the SP and LP modes.



Adjusting the Picture Quality— SHARPNESS

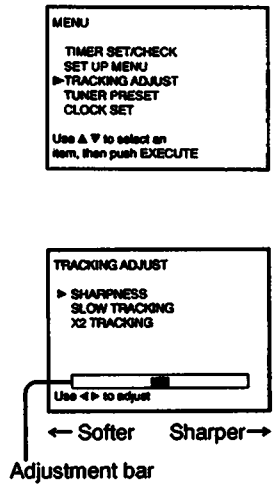
Use the SHARPNESS to enjoy clear playback picture. (These functions have no effect on TV picture.)

1 Display the TRACKING ADJUST menu.
Follow steps 1 through 3 on page 46.

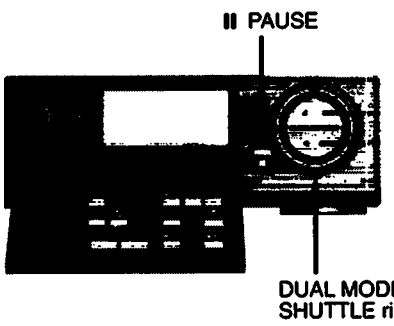
2 Press ▲ or ▼ to move the cursor (▶) to SHARPNESS.

3 Press ◀ or ▶ to adjust the picture to your preference.

4 Press EXECUTE.
The TRACKING ADJUST menu disappears from the TV screen and original screen returns.



Cutting out the Unwanted Scenes — SHUTTLE EDIT



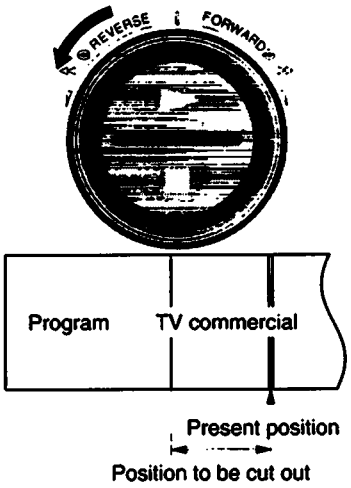
During Recording

This function works only on the unit.

If you want to cut out scenes such as TV commercials, you can pause recording and rewind the tape until the beginning of an unwanted scene is reached. You can then, record over it. This feature is controlled using the DUAL MODE SHUTTLE ring on the VCR. During timer-activated recording, you cannot use this function.

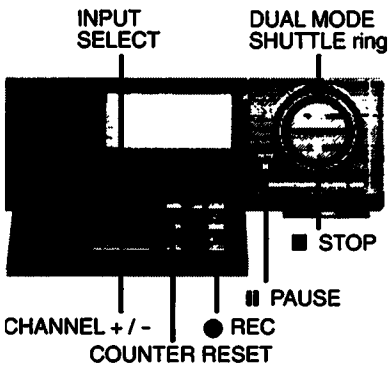
1 Press II PAUSE while recording.
The VCR enters recording pause mode.

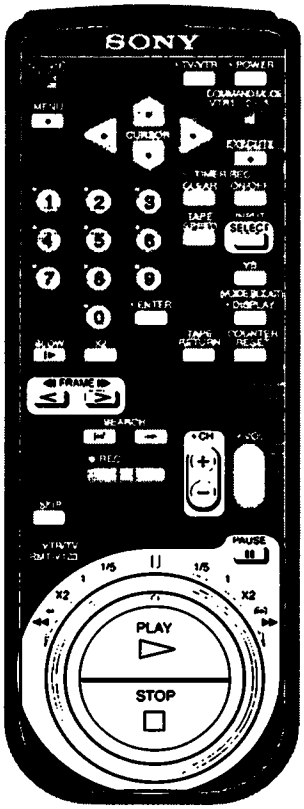
2 Turn the DUAL MODE SHUTTLE ring on the VCR counterclockwise to rewind the tape until the scene you want to start cutting out appears.



Turn the ring slightly. While rewinding, the screen changes to the playback picture but sound is not switched. When you release the ring, the VCR enters playback pause mode. After 3 seconds, VCR returns to recording pause mode.

3 Press II PAUSE when the scene you want to start cutting out appears on the screen.
Recording starts.





During Playback

You can re-record over the unwanted portion of a pre-recorded cassette. Use the DUAL MODE SHUTTLE ring.

1 Press II PAUSE at the end of the unwanted scene during playback.
The VCR enters playback pause mode.

2 Press COUNTER RESET to set the linear counter to "0H00M00S".

3 Turn the ring until the beginning of the unwanted scene appears on the screen.
When you release the ring, the VCR enters playback pause mode.
Use FRAME < or > to advance or rewind the picture frame by frame to find more specific points.

4 Press ● REC.
The VCR enters recording pause mode.

5 Select a new program for re-recording.
Select the channel or change the input by pressing CHANNEL +/– or INPUT SELECT.

6 Press II PAUSE when the scene to be recorded appears on the screen.
Recording begins.

7 Press ■ STOP when the linear counter shows "0H00M00S".

Note:

The picture may be distorted a moment at the cut-out point (recording end point).

Overview of the Editing Functions

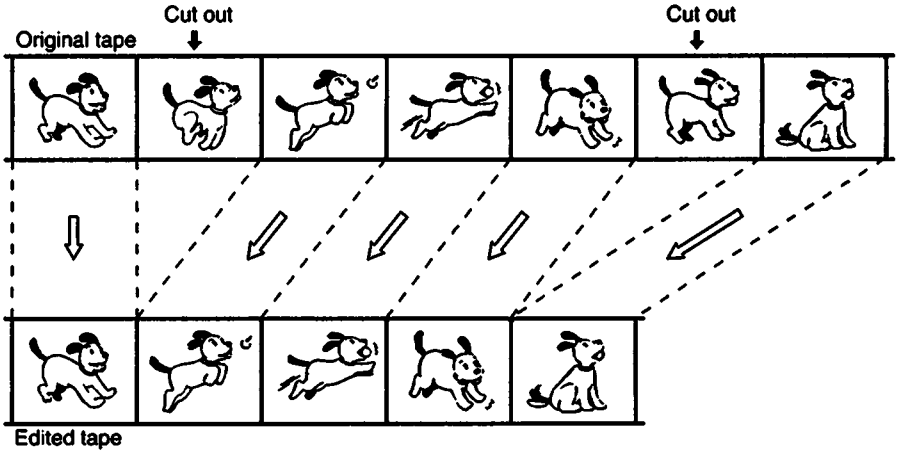
Using an additional VCR, you can record programs from one VCR to the other. The following are the tape editing functions available on the VCR.

• To make a copy of a tape

—> See "Tape Dubbing" on page 51.

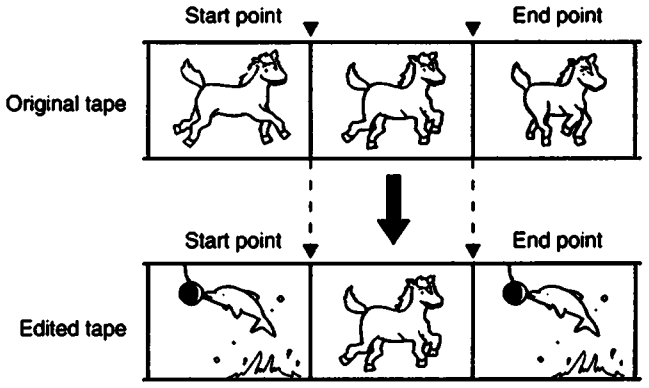
• To edit out unwanted scenes

—> See "Assemble Editing" on page 54.



• To insert another scene into a tape

—> See "Insert Editing" on page 54.



• To edit tapes using the synchronized editing function

—> See "Synchronized Editing" on page 57.

You can also use the synchronized editing function to perform assemble editing and insert editing if your another VCR has a control L connector. Using this function controls both the playback VCR and the recording VCR simultaneously.

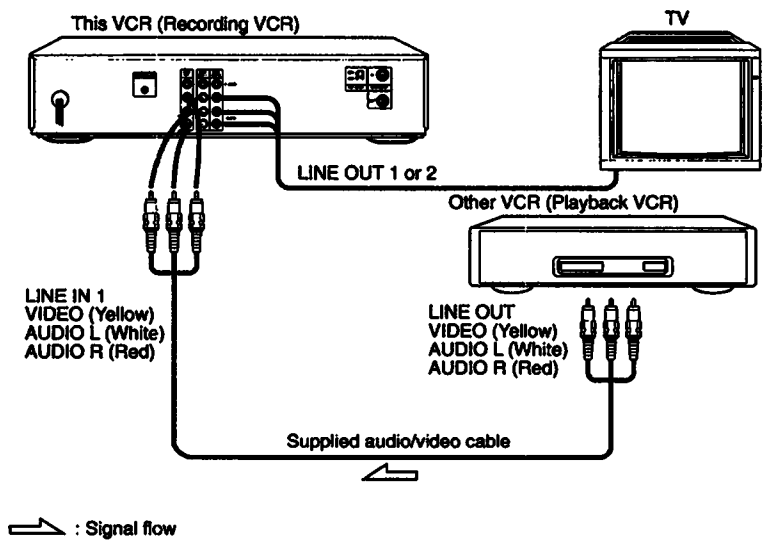
Tape Dubbing

Editing from the Other VCR

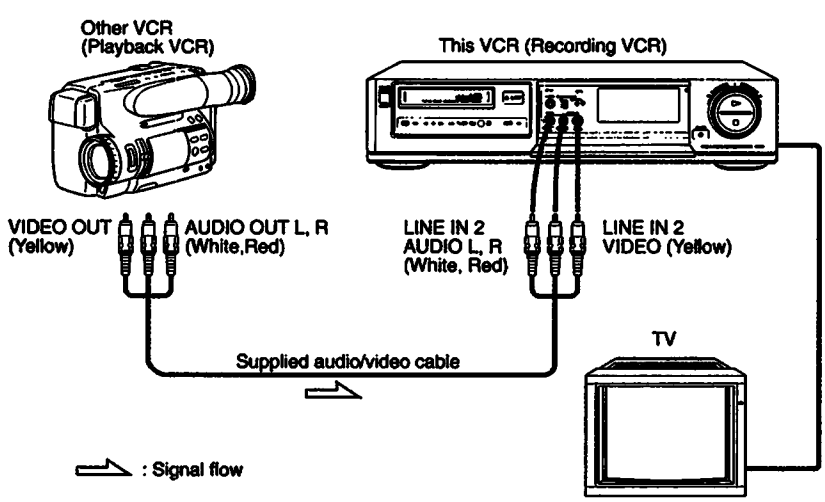
Here's how to edit from the other VCR (such as an 8mm video camera recorder or a VHS-format VCR for playback) when using this VCR for recording.
You can use the jacks located on the front panel or rear panel to perform this operation.

Connections

When using the rear panel jacks



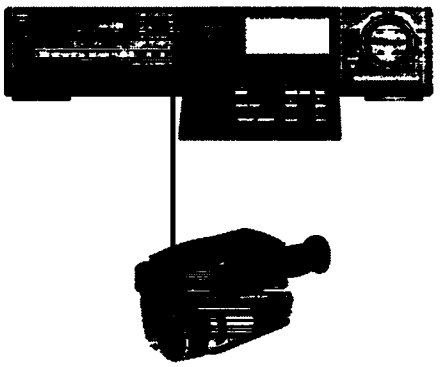
When using the front panel jacks



Notes:

- When the other VCR has a S VIDEO connector, use the S VIDEO conneting cable. This connection gives you a higher quality picture than using the video cable.
- When connecting the VCRs, do not connect both LINE IN and LINE OUT jacks on your VCRs simultaneously. Doing so may cause a humming noise.
- To avoid deterioration of picture quality, remember to switch on the EDIT function of the other VCR if the EDIT function is provided with that VCR.
- If your playback VCR is a monaural unit, connect the white plug to LINE IN 1 AUDIO L or LINE IN 2 AUDIO L on this VCR. This lets you record the sound of the playback VCR on both channels of this VCR. Do not connect the white plug to LINE IN 1 AUDIO R or LINE IN 2 AUDIO R.
- When you use the VIDEO IN jack and S VIDEO IN connector at the same time, the S VIDEO IN connector takes priority.

This VCR
(Recording VCR)



Other VCR
(Playback VCR)

Before you begin

- Select the tape speed (SP or LP) using TAPE SEED.
- Press INPUT SELECT to select LINE IN 1 or LINE IN 2.
  (When connected to the rear panel, select LINE IN 1. When connected to the front panel, select LINE IN 2).
  The L1 or L2 indicator appears in the display window of the VCR.
- Press EDIT so that EDIT indicator appears in the display window of this VCR.
  If your playback VCR has also an editing function, select this function to reduce static and improve reception.

Operation

1 Insert a blank cassette into this (recording) VCR.

2 Turn on the other (playback) VCR and insert a source cassette.

3 Locate the playback starting point and select the playback pause mode on the other VCR.

4 Locate the recording starting point and select the recording pause mode on this VCR.

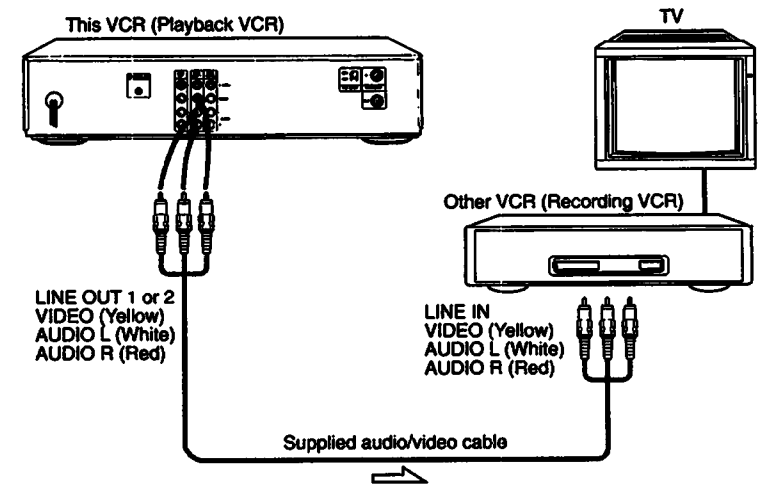
5 Press II PAUSE on both VCRs.
For the best results, press II PAUSE on the other VCR just before pressing II PAUSE on this VCR.
When you've finished editing, press ■ STOP on both VCRs.

Notes:

- If your recording VCR is equipped with the S VIDEO INPUT connector, you can use the supplied S VIDEO connecting cable to connect to the S VIDEO OUT connector on the VCR.
- If your recording VCR is a monaural unit, make connections using the VCM-910MS/920MS cable (not supplied).
- When connecting the VCRs, do not connect both LINE IN and LINE OUT jacks on your VCR simultaneously. Doing so may cause a humming noise.

Editing onto the Other VCR

Here's how to use this VCR (as the playback VCR) and the other VCR (as the recording VCR).

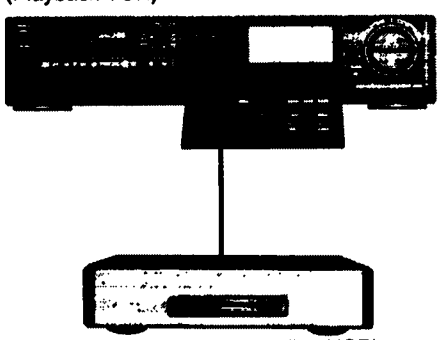


Before you begin

- Press EDIT so that the EDIT indicator lights up in the display window of this VCR.

  If your recording VCR has an editing function, this function should also be selected to improve reception.
- Press DISPLAY to turn off the information on the screen. Otherwise, the information on the screen will be recorded.

Operation



1 Turn on the other (recording) VCR and insert a blank cassette.

2 Insert a source cassette into this (playback) VCR.

3 Locate the playback start point and select the playback pause mode on this VCR.

4 Locate the recording start point and select the recording pause mode on the other VCR.

5 Press II PAUSE on both VCRs.
For best results, press II PAUSE on this (playback) VCR just before pressing II PAUSE on the other VCR. When you've finished editing, press ■ STOP on both VCRs.

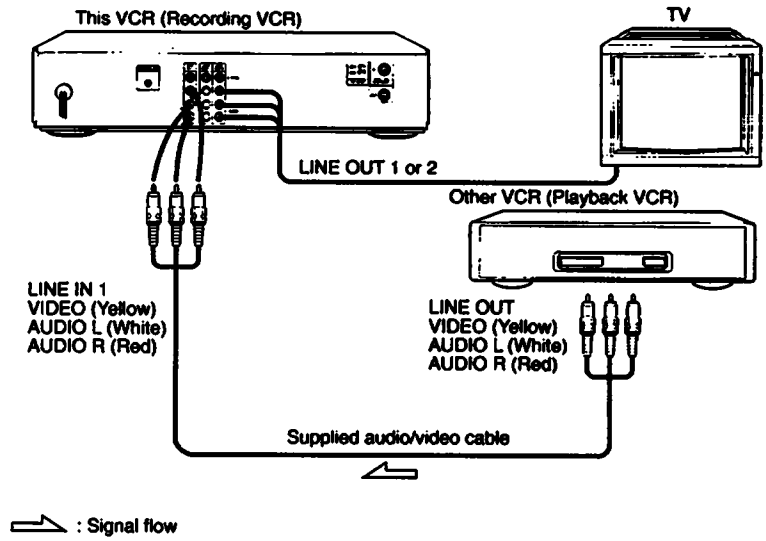
Assemble Editing/Insert Editing

When connecting to equipment that has the LANC connector, you can take advantage of the synchronized editing function. For the synchronized editing, se page 57.

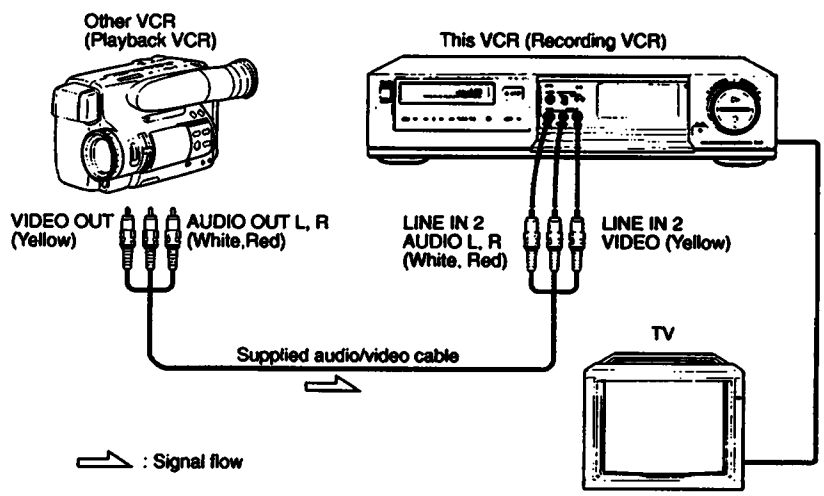
Connections

You can use the jacks located on the front panel or rear panel to perform this operation.

When using the rear panel jacks



When using the front panel jacks



Notes:

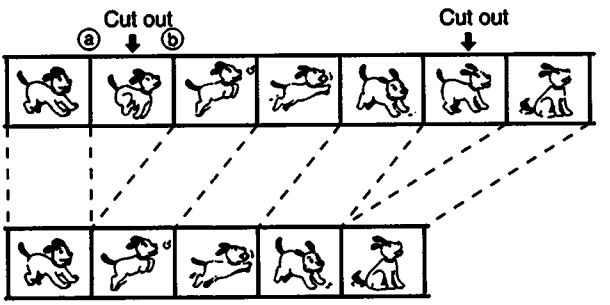
- When connecting the VCRs, do not connect both LINE IN and LINE OUT jacks on your VCRs simultaneously.
- If your playback VCR is a monaural unit, connect the white plug to LINE IN 1 AUDIO L or LINE IN 2 AUDIO L on this VCR. This lets you record the sound of the playback VCR on both channels of this VCR. Do not connect the white plug to LINE IN 1 AUDIO L or LINE IN 2 AUDIO R.
- To avoid deterioration of picture quality, remember to switch on the EDIT function of the other VCR if the EDIT function is provided with that VCR.

Assemble Editing

Before you begin

- Select the tape speed (SP or LP) using TAPE SPEED.
- Press INPUT SELECT to select LINE IN 1 or LINE IN 2.
  (When connected to the rear panel, select LINE IN 1. When connected to the front panel, select LINE IN 2.)
  The L1 or L2 indicator appears in the display window of the VCR.

Tape on the playback VCR



Tape on the recording VCR

Operation

1 Insert a recorded cassette into the other (playback) VCR and a cassette for recording into this (recording) VCR.

2 Record on this VCR while viewing the playback picture of the other VCR and have the VCR enter recording pause mode at the point (point ⓐ) where you want to cut out.

3 Release the recording pause at the point where you want to start recording again (point ⓑ).

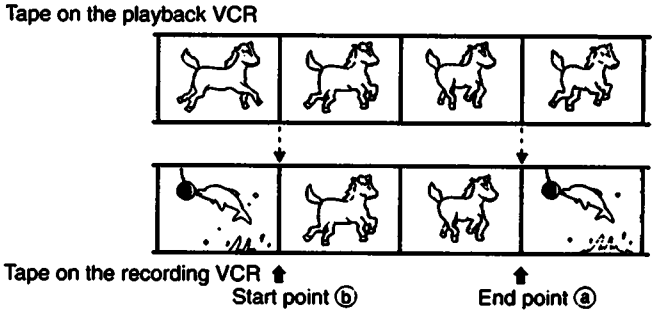
4 Repeat steps 2 and 3 to make a newly-composed tape.
When you've finished editing, press ■ STOP on both VCRs.

Insert Editing

Before you begin

- Select the tape speed in which the cassette was recorded.
- Press INPUT SELECT to select LINE IN 1 or LINE IN 2.

  (When connected to the rear panel, select LINE IN 1. When connected to the front panel, select LINE IN 2.)
  The L1 or L2 indicator appears in the display window of the VCR.



Operation

1 Insert a recorded cassette into the other VCR and a cassette for recording into this (recording) VCR.

2 Locate the editing end point (ⓐ) by playing back the cassette on this VCR and press COUNTER RESET.
The counter reads "0H00M00S".

3 Rewind the tape on this VCR and put the VCR in recording pause mode at the editing start point (ⓑ).

4 Play the tape on the other VCR and put it in playback pause mode at the point where the scene to be inserted appears on the screen.

5 Release recording pause mode of this VCR and playback pause mode of the other VCR simultaneously.

6 Press ■ STOP on this VCR to stop the recording at the editing end point (counter reading reaches to 0H00M00S) set in step 1.

7 Press ■ STOP of the other VCR to stop the playback.

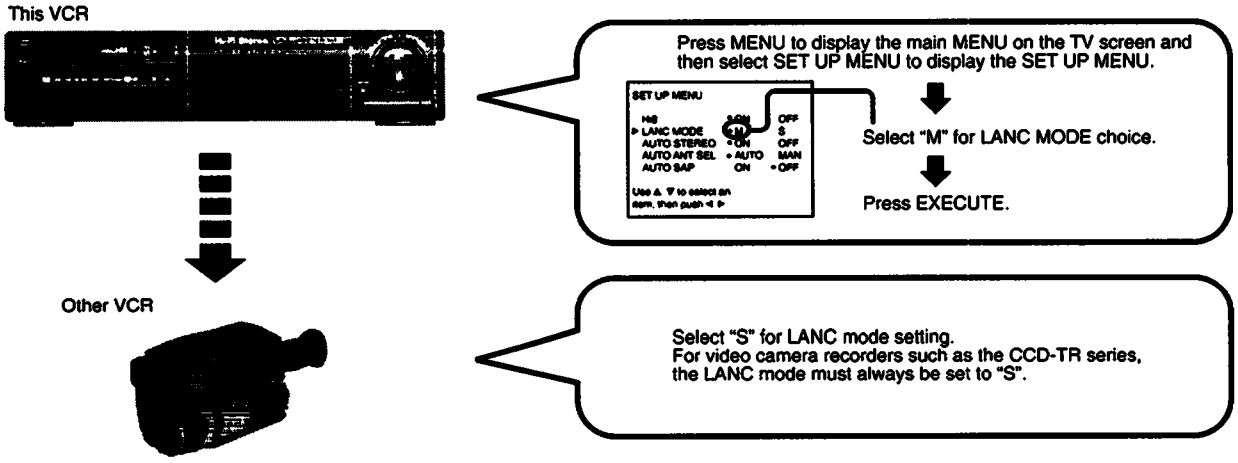
Synchronized Editing

If your other VCR has a control L or S connector, you can take advantage of a feature called "Synchronized Editing". Synchro-Edit controls both VCRs (recording VCR and playback VCR), and releases the pause when SYNCHRO EDIT is pressed. To use this function, you must connect the control cable in addition to connecting the audio and video cables. There are two types of control cables: the control L (REMOTE) cable and the control S cable. Use the one corresponding to the type of connector on the VCR.
After you have made the connections on page 58, you must choose the LANC MODE if you use the LANC cable. For details, see below and page 60.

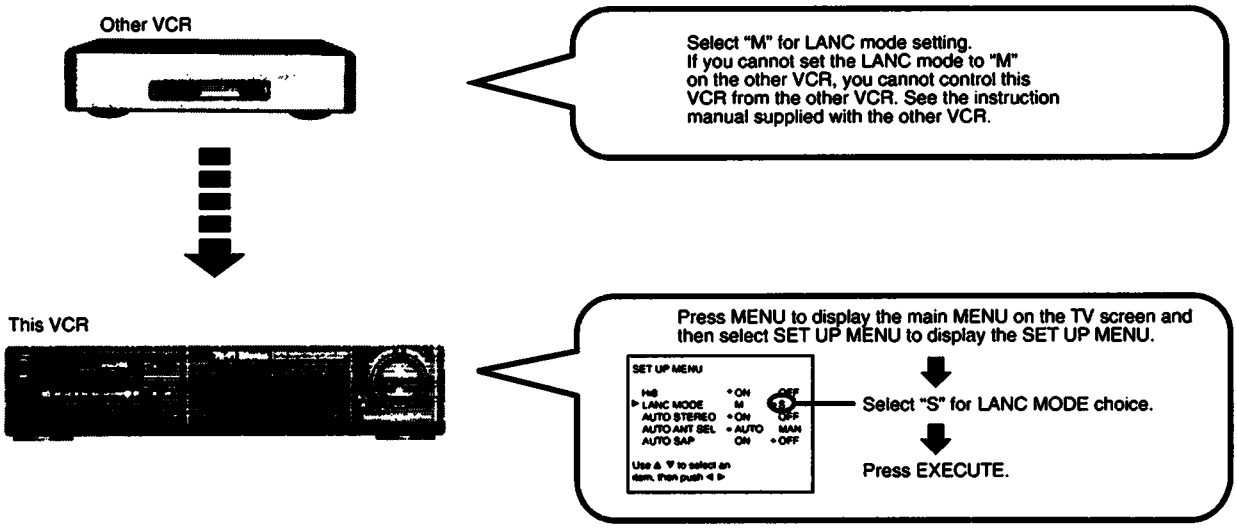
Setting the LANC Mode

When you perform synchronized editing with the control L jack, remember to set the LANC MODE as described below: Be sure this setting is correct before you begin editing, since it decides which VCR controls which.
For details, refer to page 60.

When you want to control the other VCR from this VCR

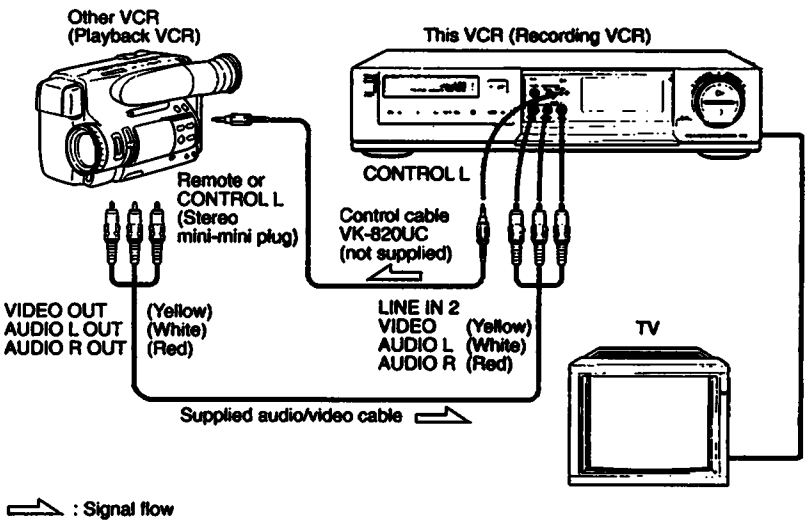

This VCR
Press MENU to display the main MENU on the TV screen and then select SET UP MENU to display the SET UP MENU.
SET UP MENU
LANC MODE
AUTO STEREO
AUTO ANT SEL
AUTO SAP
Select "M" for LANC MODE choice.
Press EXECUTE.
Other VCR
Select "S" for LANC mode setting.
For video camera recorders such as the CCD-TR series, the LANC mode must always be set to "S".

When you want to control this VCR from the other VCR


Other VCR
Select "M" for LANC mode setting.
If you cannot set the LANC mode to "M" on the other VCR, you cannot control this VCR from the other VCR. See the instruction manual supplied with the other VCR.
This VCR
Press MENU to display the main MENU on the TV screen and then select SET UP MENU to display the SET UP MENU.
SET UP MENU
LANC MODE
AUTO STEREO
AUTO ANT SEL
AUTO SAP
Select "S" for LANC MODE choice.
Press EXECUTE.

Connecting Video Equipment with the LANC Connector

You can use this connection only on the front panel



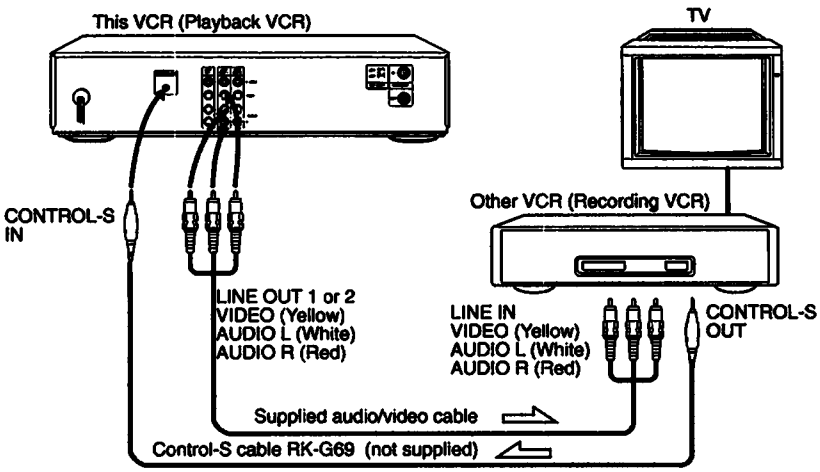
Notes:

- When connecting the VCRs, do not connect both LINE IN and LINE OUT jacks on your VCRs simultaneously. Doing so may cause a humming noise.
- If your playback VCR is a monaural unit, connect the white plug to LINE IN 2 AUDIO L on this VCR. This lets you record the sound of the playback VCR on both channels of this VCR. Do not connect the white plug to LINE IN 2 AUDIO R.
- If the other VCR has a LANC connector and a CONTROL S connector, use the LANC connector. Do not make the LANC and CONTROL S connections simultaneously.

About the (LANC)
LANC stands for Local Application Control System.
The LANC connector is used for controlling the tape transport of video equipment and peripherals connected to it. This connector has the same function as the connectors indicated as CONTROL L or REMOTE.

Connecting Video Equipment with the CONTROL S Connector

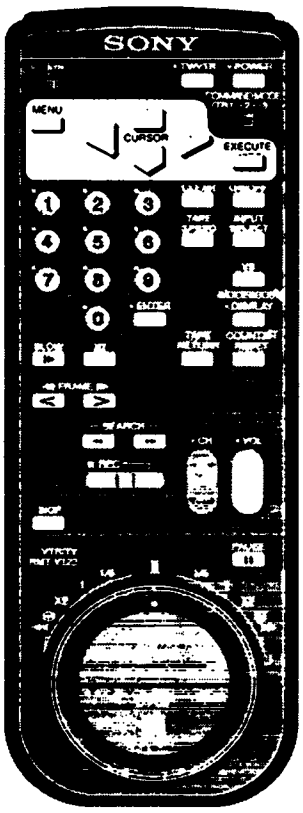
You can use this connection only on the rear panel. You cannot control another VCR, using this connection.



: Signal flow

When using the CONTROL S cable

Set the commander mode of this VCR and the other video equipment to the same position.
If the other video equipment has a synchronized edit function, use SYNCHRO EDIT on the other equipment.



LANC MODE Setting

After you have made the Control L cable connection, you must choose the LANC MODE setting. Display the SET UP MENU for this setting. For how to display the SET UP MENU and set items, see page 28.

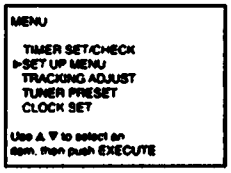
1 Press MENU to call up the SET UP MENU.

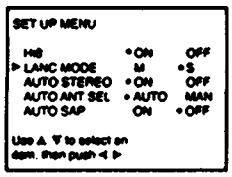
2 Choose a LANC MODE option.

M: to control the other VCR with this VCR.

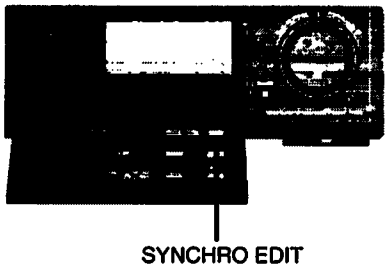
S: to control this VCR with the other VCR or editing controller.

3 Press EXECUTE to return to the original screen.





Synchronized Assemble Editing



SYNCHRO EDIT

Before you begin

- Press TAPE SPEED to select the tape speed (SP or LP).
- Press INPUT SELECT to select LINE IN 1 or LINE IN 2.
  (When connected to the rear panel, select LINE IN 1. When connected to the front panel, select LINE IN 2).
  The L1 or L2 indicator appears in the display window of the VCR.
- Check the LANC MODE setting (see page 60).

During synchronized editing

The edit function is activated automatically.

Operation

1 Insert a recorded cassette into the other (playback) VCR and a cassette for recording into this (recording) VCR.

2 Locate the recording start point on this VCR and put the VCR in recording pause mode.

3 Locate the beginning of the scene to be edited out on the other VCR and put the VCR in playback pause mode.

4 Press SYNCHRO EDIT on this VCR. The SYNCHRO EDIT indicator lights up. Pause mode of both the recording VCR and the playback VCR is released to start editing.

5 Press SYNCHRO EDIT on this VCR at the point where you want to stop recording. This VCR enters recording pause mode, and the other VCR enters playback pause mode.

6 If you have another scene you want to edit, repeat steps 3 to 5.

7 After editing has completed, press ■ STOP on both VCRs.

Technical Information

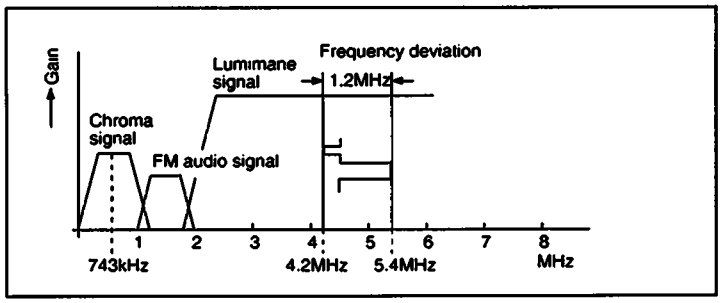
Hi8 (High Eight) Video System

The 8mm video system employs a metal powder tape. This means the video recorder (enhances picture quality) is capable of recording a large amount of information (enhances picture quality). The Hi8 video system was developed utilizing the advantages of the 8mm video system. (See the diagrams below.) The main characteristics of the Hi8 video system are as follows:

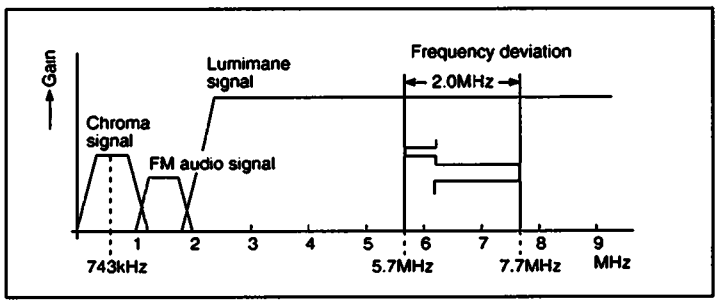
Characteristics of Hi8 System

- **Super high quality picture**
  The information capacity, a key element for picture improvement is increased by shifting up the FM carrier frequency range. In the Hi8 video system, the FM carrier frequency range of the luminance signal has been shifted up to 5.7-7.7 MHz. This is higher than the 4.2-5.4 MHz range of the standard 8mm video system. Consequently, the horizontal resolution is improved to 400 lines.

Frequency allocation of the standard 8mm video system



Frequency allocation of the Hi8 video system



- **Use of high grade tape to match the Hi8 video system**
  Metal tape for the Hi8 video system is ideal because it has greater magnetism which permits high-density recording. The Hi8 VCR uses such high-grade tapes for the Hi8 video system, covering a wide frequency range, to achieve a high-quality video signal for recording/playback.

- **S-VIDEO (separate luminance/chroma signal) input/output connectors**
  Conventionally, the video signal exchanged between the TV set and video equipment or among several video devices is called a composite video signal, in which the luminance (Y) and chroma (C) signals are mixed. In this system the composite video signal is liable to produce interference, resulting in a reduction picture quality. To avoid this quality reduction, an S-VIDEO connector is used to transmit and receive the video signal separated into the luminance signal and the chroma signal. With the separated video signal, flicker and color blur in the picture are minimized and sharpness is enhanced to such an extent that hair and fine stripes are clearly visible. The S-VIDEO connector also assures excellent editing quality with a minimum loss of picture quality.

- **Tape speed**
  The Hi8 video system uses the same tape speed as the standard 8mm video system. An E6-120 (or P6-120) allows four hours of recording and playback in LP mode.

Recording and Playback in the Hi8 Video System

To take advantage of the EV-S2000 Hi8 video system, you must use Hi8 video tapes for recording and playback.

You can use the EV-S2000 to record and playback standard 8mm video tapes if Hi8 quality is not necessary. (The Video 8 and standard 8mm systems are often referred to as "normal" mode.)

The EV-S2000 automatically detects the type of video system (standard 8mm or Hi8) in which the tape was recorded and plays the tape back accordingly.

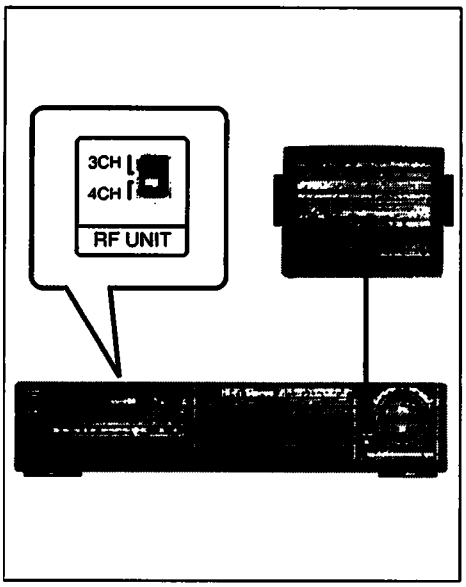
To make the most out of the Hi8 video system, select "ON" on the SET UP MENU. In this way, the EV-S2000 records in the HI8 video system (see "Using the SET UP MENU" on page 28).

Compatibility with conventional video recorder decks

Tapes recorded using the Hi8 video system cannot be played back on conventional 8mm video equipment (standard 8mm video system).

General Setup Information

Setting the RF UNIT



If you have connected a TV or color monitor equipped with audio/video input jacks to your VCR, skip this adjustment.

Why this setting is necessary:
You must set the RF UNIT selector at the rear of the VCR properly so that your TV can receive the correct signal from the VCR. Set the selector to 3 CH (Ch 3) or 4 CH (Ch 4), whichever channel is not active in your area.

1 Set the RF UNIT at the rear of the VCR to 3 CH or 4 CH, whichever is not used in your area.

2 Press POWER.
The power lamp lights up on the front of the VCR.

3 Press TV/VTR.
The VTR indicator lights up in the display window.

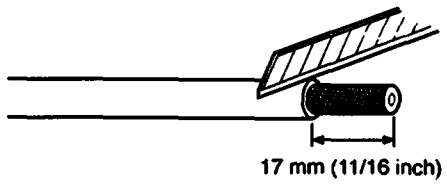
4 Check that the TUNER indicator appears in the display window, then select an active channel in your area by pressing CHANNEL +/–.

5 Turn on your TV and set it to the channel you selected in step 1.
Your TV is now tuned to the VCR. Whenever you use the VCR, set the TV to this channel.

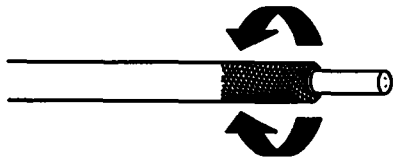
> **Note:**
> For details on adjusting TV channels, see your TV instruction manual.

Attaching the F-type Connector (not supplied)

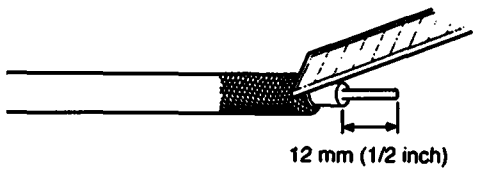
1 Strip 17 mm (11/16") of the black polyvinyl jacket.



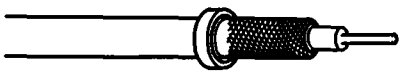
2 Fold back the woven wire.



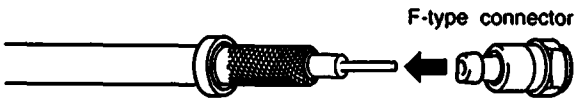
3 Strip 12 mm (1/2") of the white plastic casing, leaving 12 mm of the center conductor.



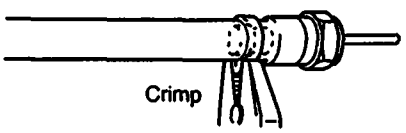
4 Slip the crimping ring over the cable.



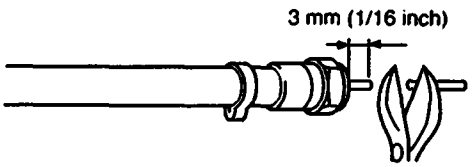
5 Insert the inner conductor into the F-type connector shaft and push the end of the cable into the connector as far as it will go.



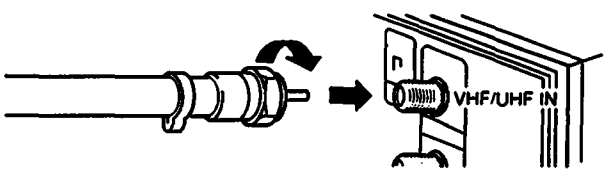
6 Slide the crimping ring over this assembly. Pinch the crimping ring with pliers to hold the connection in place.



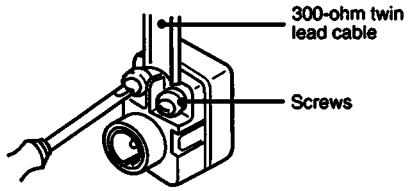
7 Cut the center conductor leaving 3 mm (1/6") from the end.



8 Insert the F-type connector into VHF/UHF IN plug on the VCR.



Attaching the External Antenna Connector (supplied)

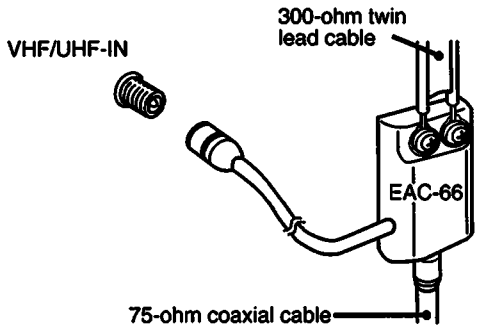


1 **Loosen the screws on the antenna connector.**

2 **Fit the 300-ohm twin lead cable on the UHF antenna under the screws on the antenna connector.**

3 **Retighten the screws.**

Attaching the EAC66 U/V Band Separator/Mixer (not supplied)



1 **Loosen the screws on the U/V band separator/ mixer.**

2 **Fit the 300-ohm twin lead cable on the UHF antenna under the screws.**

3 **Retighten the screws.**

4 **Connect the 75-ohm coaxial cable to the U/V band separator/mixer.**

5 **Connect the U/V band separator/mixer to the VHF/ UHF IN plug on the VCR.**

Troubleshooting

If you have a problem with your VCR, first check the power code connection, then go through the following list. Should the difficulty persist, unplug the unit and contact your Sony dealer or local authorized Sony Service Center facility.

	Symptom	Possible causes and remedies
Power	The POWER switch doesn't work.	• The power cord is disconnected. • The VCR is in timer standby mode.
Time and Date Clock	The clock has stopped and "– : – –" lights up.	• There has been a power interruption. Reset the time, date and timer settings.
TV Reception	The reception is poor.	• The channel for the VCR is not correctly tuned on the TV. • The TV signal is weak. Adjust the direction of the antenna. • The AC power cord of the VCR is disconnected.
Recording and Playback	Shaky and/or snowy picture during recording.	• The TV channel is not set to the one preset for the VCR. • The TV signal is weak. Adjust the direction of the antenna.
	No picture on the TV screen.	• Press TV/VTR so that the VTR indicator appears in the display window. • The channel is not set to Ch 3 or Ch 4, or the video input has not been selected at the monitor. • Make sure that S VIDEO connection is tight. • Clean the video heads. (See page 69)
	The VCR won't record.	• No cassette has been inserted. • The tape has run out. • INPUT SELECT is not set correctly. • Remove the S video connecting cable from the S VIDEO IN when the cable is not used.
	The playback picture is not clear.	• The channel for the VCR is not correctly tuned on the TV. • The video heads are dirty. Clean the heads using the Sony V8-25 LH Video Head Cleaning Cassette. For details on cleaning, refer to the instructions furnished with the cleaning cassette. If a cleaning cassette is not available in your area, have the heads cleaned at your nearest Sony Service Center facility. (Do not use a commercially available wet-typed cleaning cassette. It may damage the video heads. • The video heads are worn out. • Select SHARPNESS to adjust its setting to your preference in the TRACKING ADJUST dispay.
	Noisy picture	• Place the VCR away from the TV. • The tape is defective. Use a new cassette.
	The picture rolls vertically during picture search mode.	• Adjust the vertical hold contrlol on the TV or color monitor
	The sound drops out.	• The cassette is defected. Use a new video cassette.
	A stereo recording cannot be made.	• AUTO STEREO is set OFF in the SET UP MENU. • The reception signal is not strong enough, so the stereo signal is received in monaural.
	The cassette is ejected when the ● REC button is pressed.	• Check the safety tab. The red safety tab should not be visible.

	Symptom	Possible causes and remedies
Time Recording	A timer setting cannot be made.	• The current time has not been preset (see page 24).
	The TIMER REC (recording) lamp is not lit even though you've pressed TIMER REC ON/OFF.	• No cassette has been inserted. • The tape has run out. • No setting for timer-recording has been made.
	The cassette is ejected when performing a timer setting.	• The safety tab of the cassette is slid out.
	The timer recording was not made.	• There has been a power interruption of one hour or more. • TIMER REC ON/OFF was not pressed. • The date and clock settings are not correct.
Information on the screen	The information does not appear on the screen.	• Press DISPLAY.
Other problem	A cassette cannot be inserted.	• A cassette has already been inserted.
	The Remote Commander cannot be operated.	• The COMMAND MODE has not been set correctly. Set the COMMAND MODE on the VCR and the Remote Commander to the same number, for example,"VTR 2" (see page 21). • The batteries are low.
	A short beep sounds repeatedly and ON SCREEN HELP message appears on the TV screen.	• An illogical operation has been tried. See the "On-Screen Help Messages" (see page 68).
	The VCR does not respond when you press any button.	• Internal error. Pressing CL (clear) inside the front panel with a pointed object such as a ballpoint pen, may fix the problem. All stored information (e.g., the clock and any preset programs) will be erased.
	When doing synchronized editing, you cannot control the other VCR from this VCR.	• The LANC mode of the other VCR is set to M. • The LANC mode of this VCR is set to S.

On-Screen Help Messages

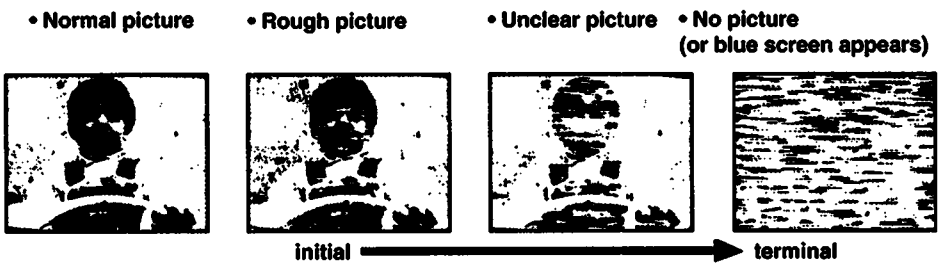
Please put in a cassette
Please stop the tape
Please push INPUT SELECT
Please set clock
Tab on the cassette is locked
Please rewind or put in a new cassette
Please push TIMER REC to set timer
No timer recording has been set
VCR is recording
The tape is rewound

Taking Care of Your VCR

Video Head Cleaning

When playback pictures are noisy and hardly visible, the video heads may be contaminated. In such a case, clean the video heads using the V8-25CLH video head cleaning tape (not supplied) or ask Sony service personnel to clean the video heads.

Symptoms caused by contaminated video heads



Worn Video Heads

If the VCR displays a poor picture after you clean the video heads, you may need to replace them. Consult your dealer or the Sony Service Center nearest you.

Check the Video Heads after 1,000 Hours of Use

A VCR is a high precision machine. It must record on or play back from magnetic tapes on which the image signals from the color TV or the video camcorder are recorded.

The video head or mechanical parts for transporting the tape are contaminated or worn after extended use. You should have the VCR checked (cleaning, oiling and replacing of worn parts) after each 1,000 hours of use.

Specifications

System

Video recording system
Rotary two-head helical scanning FM system
Audio recording
Rotary head, FM system (2 channels)
Video signal NTSC color, EIA standards
Usable cassette 8mm video format cassettes
Tape speed
SP: approx. 1.43cm/sec.
LP: approx. 0.72cm/sec.
Maximum recording time
SP: 2 hours 30 minutes
LP: 5 hours
(with Sony P6-150)
Fast-forward and rewind time
Approx. 4 minutes (with Sony P6-120 cassette)
Tuner section
Channel coverage
VHF channels 2 to 13
UHF channels 14 to 69
Cable TV channels 1 to 125
VHF/UHF output signal
Channel 3 or 4 (selectable)
75 ohms, unbalanced
VHF/UHF input signal
75 ohms, F-type connector for VHF/UHF IN and VHF/UHF OUT

Inputs and outputs

Video input LINE IN 1/2 VIDEO
(phono jack)
(1 each)
Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
Video output LINE OUT 1/2 VIDEO
(phono jack)
(1 each)
Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
S VIDEO input LINE IN 1/2 S VIDEO
(4-pin, mini-DIN)
(1 each)
Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
Chrominance signal: 0.286 Vp-p, 75 ohms, unbalanced
S VIDEO output LINE OUT 1/2 S VIDEO
(4-pin, mini-DIN)
(1 each)
Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
Chrominance signal: 0.286 Vp-p, 75 ohms, unbalanced
Audio input LINE IN 1/2 AUDIO
(phono jack)
(2 each)
Input level: –7.5 dBs
Input impedance: more than 47 kilohms
Audio output LINE OUT1/2 AUDIO
(phono jack)
(2 each)
Standard impedance: –7.5 dBs at load impedance 47 kilohms
Output impedance: less than 10 kilohms
CONTROL S IN
(mini jack)
CONTROL L
(3-pin mini-mini jack)

Timer

Clock Quartz lock
Timer indication 12-hour digital indication
Timer setting Only for recording
6 events/1 month max.

General

Power requirements 120 V AC, 60 Hz
Power consumption 30 W(max.)
Operating temperature 5°C to 40°C (41°F to 104°F)
Storage temperature –20°C to 60°C (–4°F to +140°F)
Dimensions Approx. 430 x 92 x 325 mm (w/h/d)
Approx. 17 x $3^{5}/_{8}$ x $5^{1}/_{8}$ in
Mass Approx. 4.9 kg (10 lb 13 oz)

Remote Commander RMT-V123

Remote control system Infrared control
Command mode Selectable VTR 1, 2 or 3
Power requirements 3V DC
2 size AA batteries
(IEC designation R6)

Supplied accessories, see page 5.

Design and specifications are subject to change without notice.

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If you have any question about this product, c
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